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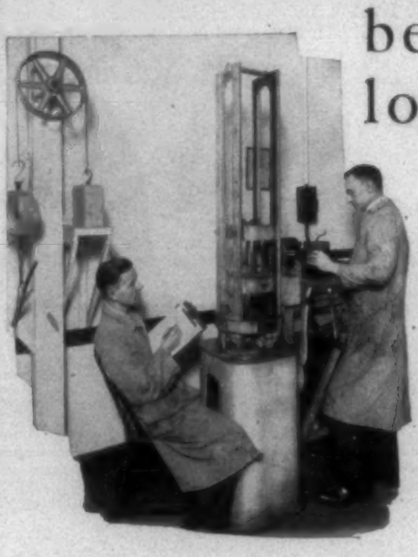
SOUTHERN
TEXTILE BULLETIN

VOL. 30 CHARLOTTE, N. C., THURSDAY, JUNE 17, 1926 NUMBER 16

By every test of belting quality—chemical tests—physical tests—and actual service tests on the pulleys—Chicago Belting leather belts last longer and save money. You can reduce your annual belting bills from 20% to 40% by using these belts exclusively.



The Chicago Belting Company offer to textile mills an improved leather belting that will last longer and do better work. These belts average more tensile strength, considerably less stretch, a high adhesion to the pulley and more actual leather per pound than the average of any other first quality, center stock, oak tanned leather belting. All by actual tests. For breakers, cards, spinning frames, rovers, warpers, etc., etc., they give more production, last longer and cost less, considering service.

Write for illustrated book showing how Chicago Belting Company belts are made.

Chicago Belting Company
Manufacturers of Leather Belting
122 North Green Street
Chicago, U.S.A.

Write for book illustrated in color showing how belts are made by the pre-tested method. Just off the press.

Chicago Belting

Branches specializing in textile belting:
Atlanta, Georgia - - - 37 *Trinity Ave.*
Boston, Mass. - - - 179 *Lincoln Street*

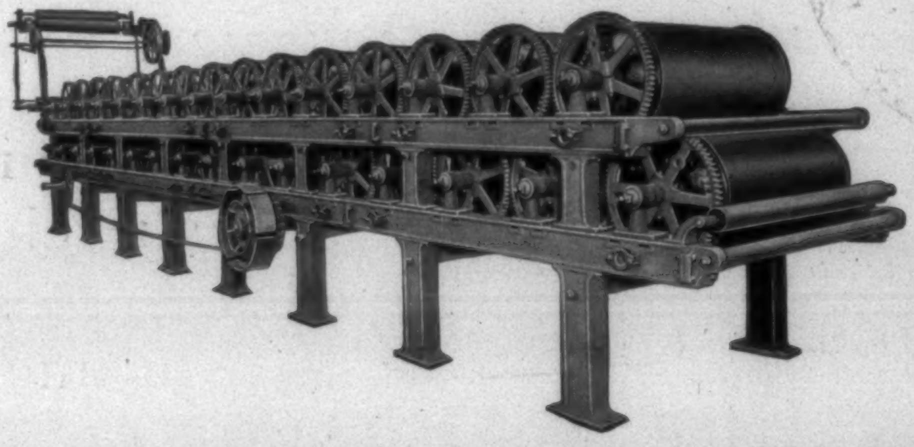
Branches specializing in textile belting:
New York City - - - 75-77 *Cliff Street*
New Orleans, La. - 203 *South Peters St.*

If You Want The Best There Is In Textile Machinery We Will Gladly Serve You

Quality and Dependability are considerations in the purchase of new equipment. Price is secondary, but our prices are no higher because of the Quality and Dependability built into our machinery

MERCERIZING
RANGES

DYEING
RANGES



FINISHING
RANGES

AND

Machinery of
all kinds for
processing cotton
fabrics and
Warp Yarns

The illustration shows a Horizontal Drying Machine consisting of heavy cast iron framing supporting thirty-one cylinders, which can be made of either copper or tinned steel according to requirements. Each cylinder mounted in Standard bearings and is driven by a cut cast iron gear meshing with the cylinder gear of the next cylinder making a train of gears driving all cylinders.

We Build
Singers
Kiers
Washers
Squeezers
Scutchers
Mangles
Padders
Dye Jiggs
Dryers
Tenters
Calenders

MAIN OFFICE AND WORKS:
PROVIDENCE, R. I.

NEW YORK OFFICE:
30 CHURCH STREET

THE
TEXTILE-FINISHING
MACHINERY
CO

CANADIAN REPRESENTATIVE:
WHITEHEAD, EMMANS, LTD.
MONTREAL, P. Q.

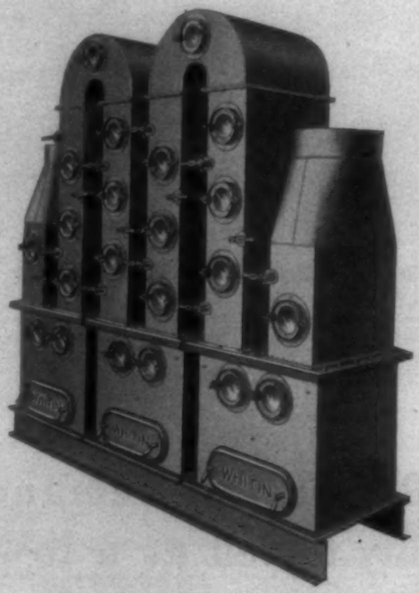
SOUTHERN REPRESENTATIVE:
H. G. MAYER
CHARLOTTE, N. C.

Inquiries both large and small receive prompt and careful attention

Increased Efficiency Better Quality

The above claims for C. O. B. Machines are warranted by the following advantages:

1. The cotton is not injured or curled and is thoroughly aerated, opened, bloomed and cleaned by agitation instead of by the ordinary method of beating.
2. A large amount of fine peppery dirt and leaf is taken out by this machine assuring longer life for the card clothing and increasing cleanliness in card and spinning rooms.
3. No good cotton is taken out in this cleaning operation.
4. No repair expenses as there are no wearing parts.



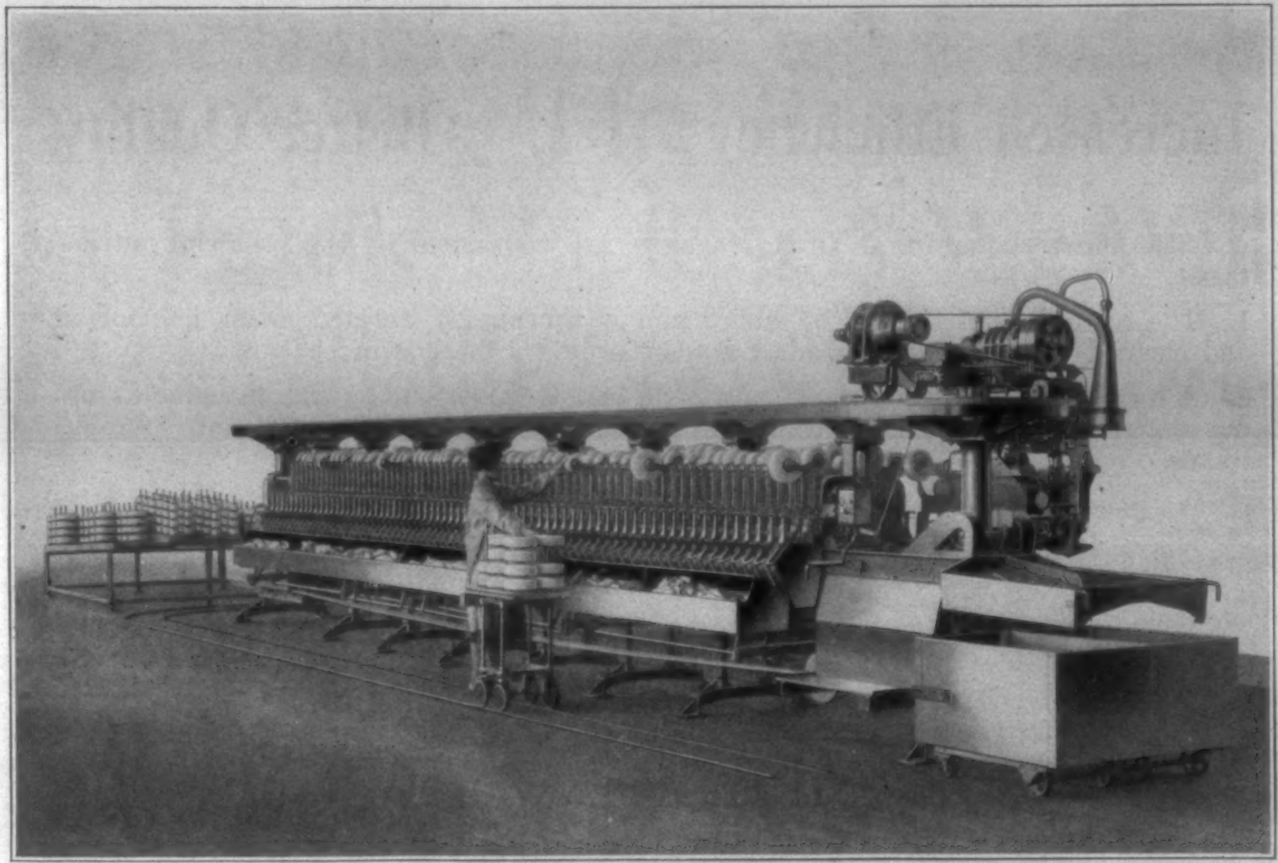
C. O. B. MACHINE
One Section

AT YOUR SERVICE

Whitin Machine Works

Whitinsville, Mass.

Charlotte, N. C. Atlanta, Ga.



140 SPINDLE AUTOMATIC SPOOLER

COMPETITION demands better quality to sell at a lower price. There is only one method of meeting this problem . . . installation of high production automatic equipment to improve quality and reduce labor costs.

"Every Knot a Weaver's Knot"

BARBER-COLMAN COMPANY

GENERAL OFFICES AND PLANT
ROCKFORD, ILL., U. S. A.

FRAMINGHAM, MASS. GREENVILLE, S. C.

The Economy of Adequate Humidification

ParkSpray Humidification Means Money for You

The Turbo Humidifier—Why and Where

Textile plants cannot be run sealed up like a bottle—nor wide open like a touring car.

In textile plants, humidifiers are mostly heat absorbers. We remember that cooling effect varies directly with the pounds of water we can get the mill air to take—at the conditions wanted.

We have five different ways of producing humidity mechanically. There are uses for these five ways or they would not be in use. Each has its place, its application, its limitations.

I'm going to talk to you about the Turbo Humidifier first—not necessarily because it's the best or the only way to humidify, but because it was the first-born of the ParkSpray family.

What is the Turbo Humidifier?

Well, some would call it an "atomizer." We will not quibble with words although "pulverizer" might be more appropriate. It uses compressed air—yes. But it also uses centrifugal force. That's what makes it do its work better in the quality of the spray—and cheaper in the amount of air used.

Compressed air costs money. So why be any more lavish with it than is necessary?

Tests of the Turbo (I'll admit I'm prejudiced—so I didn't make the tests) show that it delivers more humidity in pounds or gallons or any way you want to measure it, with less compressed air than any of the other atomizer types of humidifiers.

The Turbo (Type N) delivers something over 50% more vapor per cubic foot of air than its next best rival. Or, to put it another way, take a third of the Turbo's capacity away and it still delivers more vapor than the next best rival for each foot of air used.

The N type Turbo is a new design that makes all this possible. If you use atomizers now, you can build up your present humidifying capacity by installing these. What may be better yet—you may still be able to get along with your present compressor.

The Turbo is best suited to low-posted rooms—or to rooms where, for purposes of distribution, many heads are desirable. There is no water under pressure; the air pressure is low. It is easily and inexpensively renewed or repaired. If a Turbo head stops for any reason, it can't cause damage. There are no moving parts. And since it uses compressed air to get its kick, a very valuable accessory—compressed air cleaning—is available almost as a by-product.

You'd be surprised at the difference	Pounds of water vaporized for every cubic foot of air used	At this gauge pressure
The Turbo Type N, non-adjustable fixed delivery	6.03	30
The best of any competing device we could find	4.30	30
The worst ditto	2.01	20

Greater deliveries might have been secured in the case of the last two, but any attempt at increasing deliveries was accompanied by too coarse a spray which wet the floor.

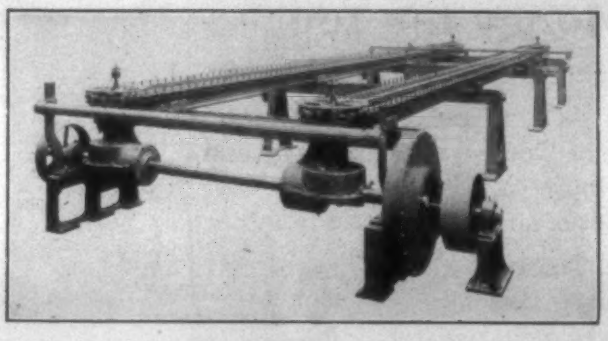
Parks-Cramer Company
Engineers & Contractors
Industrial Piping and Air Conditioning
Fitchburg Boston Charlotte
Canadian Agents. W. J. Westaway Company, Ltd.
Hamilton, Ontario, Montreal, Quebec

Adequate Humidity means adequate capacity. Capacity means gallons.

In gallons of water evaporated, ParkSpray equipment is the lowest in price.

Features of these Butterworth Machines are:

Efficiency and low maintenance cost



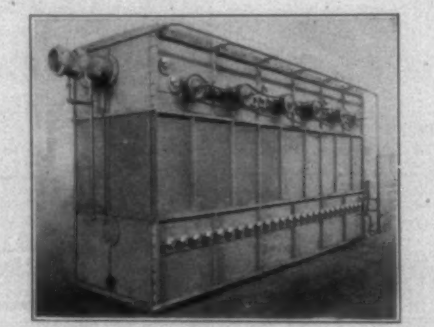
The New Butterworth Tenter.

The New Butterworth Tenter

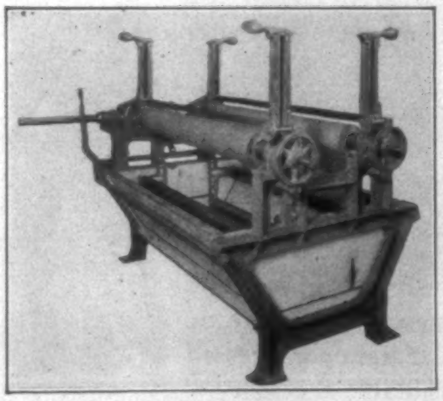
This is the new Butterworth Tentering Machine made to meet the need for a light running power saving tenter. A booklet describing the features of this tenter and giving suggestions as to the care of tenter chains will be sent you promptly upon request.

Agers for Hydrosulphite and Aniline Work

Butterworth Agers are equipped for all classes of hydrosulphite and aniline work and have perforated steam pipes top and bottom. Heating coils for high pressure steam are placed on either side or bottom. This enables you to readily produce and conserve a high temperature. There is a patented automatic mouthpiece for entry and delivery of cloth. This excludes practically all air.



Agers for Hydrosulphite and Aniline Work.



Our New Jigger.

Our New Jigger.

IT HAS IN IT 65 POUNDS OF MONEL METAL

This is our standard jigger for light work. The box is of soapstone, joints are filled with cement which sets as hard as the stone itself. The bearings of the immersed rolls are supported from the cast iron frame. There are no holes in the soapstone and the box can be readily changed.

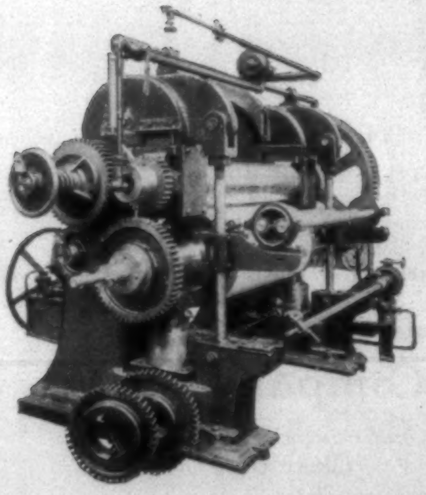
The Beam rolls are 6½ to 7" rubber covered and run on ball bearings—the immersion rolls run on graphite rubber bearings. All gears are cut.

Shreiner Calender, which also can be used as a Charmeuse calender--Being only necessary to change from plain to engraved roll

This calender is particularly good for giving a heavy finish to light fabrics—a gas-heated roll and paper bottom roll being used.

Our heaviest type of housings are in this calender. The top roll is steel. It is 12" diameter by 46½" face, bored and arranged to take gas at both ends. It also can be built to take a 26" diameter roll, if desired.

It is equipped with a two-plunger hydraulic pump, accumulator and ram-pump is motor driven.



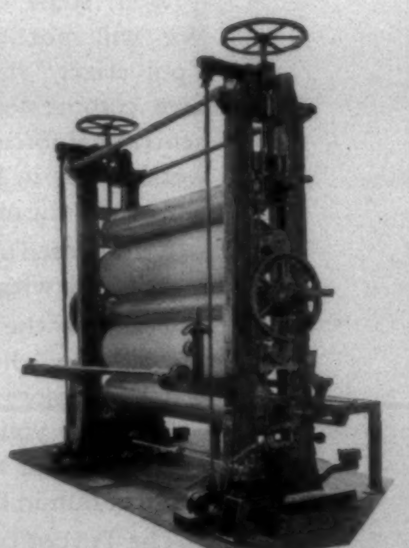
Shreiner Calender which also can be used as a Charmeuse calender—Being only necessary to change from plain to engraved roll.

Five Roll Calender With Hydraulic Jack. (*Patented*)

The hydraulic attachment on this calender parts the rolls when it is necessary to let the calender stand idle from time to time. This saves climbing to the top of the machine 13 or 17 feet and parting the rolls by means of a hand wheel.

The jack is fitted with single action hand operated hydraulic pump, while the calender is fitted with a pair of hydraulic cylinders and rams. The distance between the rolls is governed by the position of the saddle at the end of the journals. Through this jack, an operation which ordinarily requires two men and from 10 to 15 minutes of time is done by one man in about two minutes.

We shall be glad to go into further details of any of these Butterworth machines. Also we are always glad to quote prices. Despite the quality which is regularly built into all Butterworth machines most concerns using our machinery have found that Butterworth machinery is not high priced.



Five Roll Calender with Hydraulic Jack.
(Patented)

H. W. BUTTERWORTH & SONS CO.
Established 1820
PHILADELPHIA, PA.

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BUTTERWORTH *Finishing* MACHINERY

SOUTHERN
TEXTILE BULLETIN

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VOL. 30 CHARLOTTE, N. C., THURSDAY, JUNE 17, 1926 NUMBER 16

Plan National Textile Association

THE first step in what is expected to result in the organization of the cotton industry on a national scale through co-operative action on the part of the manufacturers was taken at a meeting of leaders of the industry throughout the country who met Friday at the Biltmore hotel, New York. The meeting was executive.

"Nationalism must replace sectionalism," speakers declared during the session, which began at 11:30 o'clock in the morning and was adjourned about 4:30 o'clock. Shortly before the close of the meeting a resolution was adopted to have a committee of ten members, five to be appointed by the President, W. B. MacColl, of the National Association of Cotton Manufacturers, and five to be named by James P. Gossett, head of the American Cotton Manufacturers' Association.

This committee will make a study of the organization of other industries on a national scale, such as the steel industry, and following the completion of their inquiry as to what plan will best meet the problems of the cotton industry will make a report to the gathering of textile leaders who assembled here Friday.

"The committee," declared one of the mill men, will make a "study" of the whole situation in the cotton industry and will also study the industries in the country which are already organized along co-operative lines with the view to making a recommendation at an early date of a proposal which will bring more united action among the cotton men to solve the problems now confronting them.

Manufacturers interviewed after the session on the question of curtailment declared that manufacturers, acting individually, have appeared to have adopted the policy of making no stocks of merchandise in advance of orders. The extent of curtailment, some of the men said, appears to be on the increase and is now estimated at from 20 to 50 per cent.

Stuart W. Cramer, joint president of the National Council of American Cotton Manufacturers, with William B. MacColl, president, presided at the meeting which was called by the National Council at the request of a number of the manufacturers throughout the country. Speakers urged the textile men to submerge individualism and to substitute nationalism and sectionalism. This they declared is to be a great national movement and from expressions of opinion here we are sure the manufacturers will co-operate for the benefit of all concerned. The cotton industry, they added, leads all of the others in the country in the number of persons employed and the persons indirectly dependent upon it amounts to millions.

Co-operative accomplishment, they continued, should replace individual effort in meeting these problems and in the conduct of the industry. Other industries have organized successfully on a national scale and the proposal to have the cotton industry organized in a similar way is to be considered by this committee.

The board of government of the National Association of Cotton Manufacturers was called to meet in Boston Monday and it is expected that within a few days after this meeting that President William B. MacColl will announce the names of his appointments to the new committee. President James P. Gossett, of the American Cotton Manufacturers' Association, will make known his appointments within the next several days.

The following is a copy of the resolution authorizing the appointment of the inquiry committee: "It is resolved that the president of the American Cotton Manufacturers' Association and the president of the National Association of Cotton Manufacturers each choose a committee of five manufacturers who need not be members of either association.

"These ten men shall constitute a committee who shall meet as soon as possible and study the existing successful trade associations and formulate a definite plan for an organization of cotton manufacturers and decide upon the membership thereof.

No official explanation was given as to the exact function of the proposed new "association." It was understood, however, that the organization would be the result of recommendations that will be made by the committee and will embody a definite "plan" for the co-ordination of both the Southern and Eastern industries.

When the plan is tentatively completed, it will be submitted to every cotton mill in the country, it is understood, and all will be invited to join the movement.

Before it reaches that stage of its program the committee will make a survey of the situation in the cotton goods industry and also will study the industries in the country, already organized along co-operative lines.

"This organization is aimed to be absolutely national in scope and truly representative of the entire cotton manufacturing industry."

The organization that is expected to grow out of this contemplated "plan" of co-operation will assume those functions that are beyond the scope of the two present Southern and Eastern associations. Unless the industry is organized along national lines, it was declared, it is impossible to keep production sanely regulated, create new uses for cotton goods and other cotton products, or do any of the things that are necessary for stabilization. This was the gist of the main argument presented.

Divided sectionally, as they are, the National Association of Cotton Manufacturers and the American Cotton Manufacturers have not been able to accomplish these purposes to the satisfaction of the industry as a whole. With the two groups fused into a strong national organization, it is hoped that the manufacturers of coarse yarn fabrics and the manufacturers of combed yarn goods will be able to work in harmony.

It was pointed out by one manufacturer that the name of the proposed organization is immaterial, so long as it arrives at the object sought. The functions are likely to be that of a "textile institute," whether it be given that designation or not.

The manufacturers in attendance were:

Robert Amory, Amory, Browne & Co., Boston.
J. A. Atwood, Pomona Mills, Taftville, Conn.
Nathaniel Ayer, Nyanza Mills, Woonsocket.
W. L. S. Brayton, Sagamore Mfg. Co., Fall River.
C. F. Broughton, Wamsutta Mills, New Bedford.
Morgan Butler, Butler Mills, New Bedford.
A. E. Colby, Pacific Mills, Lawrence.
C. E. Buxton, B. B. & R. Knight Corp., Providence.
B. H. B. Draper, Draper Corp., Hopedale.
B. H. Borden, American Printing Co., Fall River.
Russell T. Fisher, Nat. Assn. of Cotton Mfrs., Boston.
Frederick A. Flather, Boot Mills, Lowell.
S. Harold Greene, Lockwood, Greene & Co., Boston.
Franklin W. Hobbs, Arlington Mills, Lawrence.
William Gammell, Lonsdale Co., Providence.
Charles M. Holmes, Hlomes Mfg. Co., New Bedford.
Ernest N. Hood, Naumkeag Steam Cotton Co., Salem.
F L. Jenckes, Manville-Jenckes Co., Pawtucket.
Russell H. Leonard, Pepperell Mfg. Co., Boston.
H. F. Lippitt, Manville-Jenckes Co., Providence.
Ernest Lovering, Mass. Cotton Mills, Boston.
Arthur H. Lowe, Parkhill Mfg. Co., Fitchburg.
William B. MacColl, Lorraine Mfg. Co., Pawtucket
F. H. McDevitt, Soule Mills, New Bedford.
F. C. McDuffie, Everett Mills, Boston.
W. S. Pepperell, Warren Mfg. Co., Warren, R. I.
Andrew Pierce, Jr., Pierce Mfg. Corp., New Bedford.
J. A Sweetser, Bliss, Fabyan Co., Boston.
Ward Thoron, Merrimack Mfg. Co., Lowell.
Charles Walcott, Newmarket Mfg. Co., Newmarket, N. H.
Henry T. Whitin, Paul Whitin Mfg. Co., Northbridge.
W. J. Vereen, Moultrie, Ga.
George S. Harris, Exposition Cotton Mills, Atlanta, Ga.
T. M. Marchant, Victor-Monaghan Mills, Greenville, S. C.
Cason J. Callaway, LaGrange, Ga.
B. E. Geer, Judson Mills, Greenville, S. C.
S. W. Cramer, Cramerton Mills, Cramerton, N. C.
H. R. Fitzgerald, Riverside & Dan River Cotton Mills, Danville, Va.
J. C. Evins, Clifton Mills, Spartanburg, S C
Alex Long, Arcade Cotton Mills, Rock Hill, S. C.

(Continued on Page 43)

The Story of Cotton

On account of its very interesting observations relative to the early history of cotton and cotton manufacturing, we are printing material copied from a small book, published about 1870, in London, Eng., by the Society for Promoting Christian Knowledge. As the book was not copyrighted and is now evidently out of print, we feel a tliberty to give its contents to our readers, many of whom will be interested in the early history of the industry.—Editor.

(Continued from Last Week)

CHAPTER X.

Frame-Work Knitting.

In the Stocking Weavers' Hall, in Redcross Street, London, may be seen the portrait of a man, who is painted in the act of pointing to an iron stocking-frame, while he addresses a woman who is knitting with needles by hand. The picture bears the following quaint inscription: "In the year 1589 the ingenious William Lee, A.M., of St. John's College, Cambridge, devised this profitable art for stockings (but being despised went to France); yet of iron to himself, but to us and to others of gold; in memory of whom this is painted."

William Lee must indeed have been an ingenious man. The operations the stocking-frame are so complex, it performs its successive rows of loops or stitches with such neatness and grace, that its invention by a person hitherto unacquainted with machinery is a remarkable circumstance. It is curious too to notice how soon the machine was inventted after the intro-curious too to notice how soon the machine was invented after the introstockings with needles by hand had been introduced into England from Spain only twenty-five years before.

Two stories are told in explanation of this invention by a Cambridge scholar.

According to one account, Lee was expelled from the University for marrying contrary to the statutes. Having no other means of subsistence, he and his young wife were obliged to live on her earnings as a stocking-knitter; under the pressure of poverty, Lee set himself to contrive his frame, that he might produce stockings as well as his wife. The other account is this. In early youth William Lee wooed a fair mistress of the art of knitting, who had become wealthy by teaching a number of young women, and employing them to knit stockings under her. He watched her fingers till he had learnt how to knit too, and then he devised a scheme of making artificial fingers to knit many loopers at once. But neither the young man nor his plan for knitting by machinery found favour in the lady's eyes. When he proposed to her she rejected him with scorn. Revenge now induced Lee to carry on what had been inspired by love. He perfected his stocking-frame, taught his brother and the rest of his relations how to use it, and then set up a manufacttory of stockings at Culverton, near Nottingham. After practising the business for five years, he went to London to seek the patronage of the court. But he went at an unfortunate time. Queen Elizabeth was near her end, and James I on his accession was too busy in securing his safety on the throne to pay much attention to the manufactures of his new country. Indeed, when Lee and his brother did gain access to him and made a pair of stockings in his sight, he was not all moved in their favour. The frame seemed to him a dangerous innovation, likely to interfere with the labour of the poor and their daily bread.

The encouragement denied by the English king was however offered by Henry IV of France and his sagacious minister Sully. They invited Lee to come to France, and bring his admirable machine. He went and settled in Rouen, which has since grown into a large manufacturing place. At first he was very successful, but after the death of his patron, some of his neighbours, who were jealous of him, denounced him as a Protestant. The poor man had to fly from Rouen, and take refuge under a feigned name at Paris, where he died. Some of his workmen made their escape to England, and there, under his ingenious apprentice Aston, they mounted the stock-frame, and even made impovements in it. Thus they brought back to our island an invention which had been almost lost to it.

This first frame was set up in Leicestershire, in the year 1640, and the foundation laid for the hosiery trade, which has flourished so greatly in that country as well as in Nottingham and Derby. The frame-work knitters of London soon asked Oliver Cromwell for a charter. He refused it, but it was granted by Charles II in the year 1673. This species of manufacture has increased very much, especially during this century. There is a manufactory of hosiery at Belper, which is supposed to be the most extensive in the world. A few years ago it employed about four hundred silk stocking-frames, which produced two hundred dozen pairs of hose weekly, and two thousand five hundred cotton hose-frames, each turning off on an average nine dozen pairs weekly, the whole amounting to little less than one hundred thousand dozens in the year.

But during the last century the principle of the stocking-frame was applied to the manufacture of other articles; in particular, a machine was constructed A.D. 1777, it is thought by a poor weaver of Nottingham, for making lace with a stocking-frame. Improvement after improvement was effected in it. Imitations of every variety of lace were produced by machinery, bearing at first a high price, till they were produced in such enormous quantities that they sank in value. Lace, which in the year 1809 was sold for five guineas a yard, may now be purchased for eighteenpence; what then was valued at four and sixpence a yard, is now sold for a penny halfpenny. We can hardly me surprised at this when we see the rapidity with which the machines produce these light fabrics. Those in one alone of the manufactories at Derby, turn off fully forty thousand square yards per week, a quantity capable of covering eight acres of land.

CHAPTER XI.

Bleaching, Dyeing and Print Works.

After our digression upon hosiery and lace, we must return to the cotton goods woven in the power-looms. Time fails us now for speaking about the weaving of fustians and cotton velvets, in which a nap or pile is raised by a very curious series of operations; or of cords and corderoys, in which a ribbed appearance is produced by a peculiar management of the warp threads; or, again, of that large variety of fabrics in which a pattern is produced by introducing threads of different colours into the warp and weft; such as stripes where the warp threads are variously coloured, or checks where threads of different hues are to be found, both in the warp and the weft. We can only attend now to the ordinary description of cotton goods on leaving the loom.

A comparatively small quantity of calico is sold in that state under the name of grey, or unbleached calico. This is a strong and durable article, it becomes white with use, and it is cheaper than white calico. Still it is not generally popular on account of its dark colour. For the rest, if it is to be sold in the white state, it requires bleaching; if in a coloured state, it needs dyeing; if it is to be ornamented with a pattern, it requires printng; and so it comes to pass, that bleaching works, dye works, and print works have sprung up near the cotton factories, both in Lancashire and Glasgow districts. Often, indeed, the three operations are carried on in the same establishment.

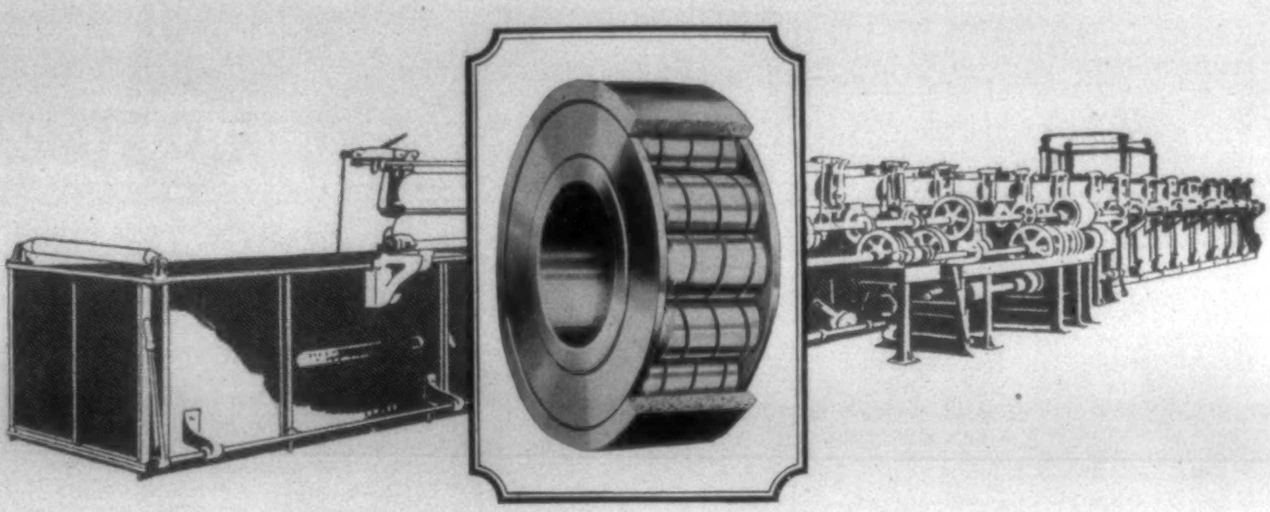
Till the present century bleaching was but a tedious process, and one which could only be carried on during the summer. The pieces of cotton cloth used to be spread upon the grass, there to lie for months together, while from time to time they were sprinkled with water. When space failed in the neighbourhood of our factories, calicoes were sent in the spring to Holland, and after lying on the level grassy plains of that country all the summer, came back whitened in the autumn. This made of bleaching took up a great deal of time, and there was constant risk of injury and depredation. When in the year 1800, Mr. Tennant introduced chloride of lime, or bleaching powder, into the operation of whitening calicoes, it was speedily adopted, and has been in use ever since.

Most large bleach-works contains a considerable range of buildings, for plenty of space is needed, and plenty of water. All the water must be filtered before it is used, as everything depends on its purity. When the grey calco is brought here from the loom on compact bundles, it is first opened by women, and ten pieces sewn together, end to end, till thee is a length of two hundred and eighty yards. This long strip is taken, should we have guessed it? to a furnace, when it is drawn raipdly over a plate of hot copper to burn off the light airy filaments, and then wound round a wet roller that the texture may not suffer from the heat. The singed cloth, now the colour of nankeen, is ready for the bleaching process, and is taken to the croft, a large building with a stone floor, full of coppers and vessels of all sorts and sizes, the air laden with steam, the ground moist and watery. Five hundred pieces of the cloth are now sewn together, till there is a length of eight miles all in one. This enormous pices passes into a washing engine to cleanse it from the dressing which the weaver had applied to his warp. This is done very thoroughly, but very quickly, at the rate of two hundred and fifty yards a minute, and as it leaves the machines the cloth is folded backwards and forwards by two men, till is forms a solid cube of five or six feet in measure. A succession of washing, and boilings, and steepings, nine or ten processes in all, bring our grey calico at last to a pure white, sulphuric acid, soda, and bleaching powders, being applied one after the other, each more than once, and the cloth washed in clean water after every application. An immense quantity of water is used, with very little acid and bleaching powder. Indeed, seven pounds of bleaching powder are said to be sufficient for whitening five hundred pieces of cloth.

From the croft, or bleaching house, the cloth is taken into a room, where boys and girls rip the several pieces asunder, and each piece is folded into a flat square mass. These masses are beaten against the edge of a stone to remove every crease from the cloth, then hung up to dry in a heated room, and lastly carried into the warehouse. The bleaching process has been perfectly successful, the calico is as white as the driven snow.

The art of calico printing was understood ni India at a very remote period, and wee from a passage in Pliny's Natural History, that it was practised in Egypt in his days, though evidently unknown in Italy. "There exists in Egypt," says the great natural historian, "a wonderful method of dyeing. The white cloth is stained in various places, not with dyes, but with substances which have the property of fixing colours. These applications are not visible upon the cloth; but when the pieces are dipped in a hot caldron containing the dye, they are drawn out dyed an instant after.

(Continued on Page 39)



Good News for the Manager!

Suppose your mill superintendent reported 4½ years of absolutely carefree bearing performance, after operating his mercerizers on a tremendous over capacity schedule?

You'd wonder—for it is well known that plain bearings give plenty of trouble in this service and require constant attention.

The mill manager who received this report investigated, however, and found that his mercerizers were equipped, four and one-half years ago, with Hyatt Roller Bearings.

Imagine the great savings effected in his plant during this period. No repairs. No replacements. No-sticking bearings. No ruined stocks, or production lags, while rectifying bearing troubles.

Hyatt Roller Bearings operate with equal efficiency in washers, fulling mills, dyeing machines, mangles and other finishing machinery.

They are built to withstand the most exacting service requirements, and show no appreciable wear. Twenty, and even thirty, years of uninterrupted service is nothing unusual for these sturdy bearings.

They pay their keep, with interest, the first year. If you are planning new equipment, be sure to include Hyatt economy and efficiency. Our Bulletin 2100 will give you the details.

HYATT ROLLER BEARING COMPANY
Newark Detroit Chicago San Francisco Worcester
Philadelphia Charlotte Pittsburgh Cleveland

HYATT
ROLLER BEARINGS

Need of Fibre Knowledge

Editor:

I was very much interested in reading in reading in the Southern Textile Bulletin some weeks ago an article headed "Can We Standardize" and in a more recent issue another article headed "Mills and Cotton Growers Should Cooperate."

In regard to the first question, I believe we can standardize, but I do not think that the mills can cooperate with the cotton growers.

First, the greatest problem and one that always confronts the manufacturers, is that of purchasing cotton to suit the mill and the product it is making. We often buy cotton for full inch and find some bales seven-eighths and others one and an eighth with the lot. Whose fault is it? Certainly not the growers, but carelessness in selecting and classing the cotton for the mill it is intended for. We know this and also that some growers in certain districts of the cotton growing states raise a higher grade of cotton than their neighbors because of the difference in the fertility of the land and in cultivation. Some full inch cotton will produce yarns with breaking strength up to standard, while other cotton of the same length will always break below standard.

I know this. Not very many mills buy cotton for a certain length. They expect to get it and rely on the cotton merchant to give them what they buy and in every lot there are just enough of the shorter and weaker fibres to keep the mill torn up at times and the work running badly.

Now the fact is the mills cannot standardize with such a variation. Let me relate a little incident that came under my observation not long ago. A certain cotton mill company, owning a group of several mills was having trouble with the work and the production of the weave room was very low in the mill that produced the finest goods. At times the spinning would hardly run and they were often short of help in all parts of the mill. The mills on coarse goods did not seem to have any trouble. They finally started to get a new carder. A number of men looked over the job and never came back. Others were not satisfied with the salary, location, etc. Finally another man came by. His hair was getting white and he was in the fifties. The manager said he thought this man was too old but the superintendent said they needed a good carder. The old man, after looking over the job, told them he could give them what they wanted, and was employed. After looking ovr the job for about a week, he found three different makes of fly frames and other machines in one room. He figured over all the constants, changed some of the front roll gears until the draft constants were the same. Next he changed the cards, slubbers and intermediates to the same draft, or so they could all be drafted alike.

He then began setting the rolls for inch cotton but the work did not go well. He was an expert cotton grader and staple man, so with the draft and twist set for inch cotton and the rolls all set for it, he went to the warehouse. In going over the cotton supposed to be full inch, he found everything from three-quarters to one and a half inches. Setting everything aside but the one inch cotton and measuring the staple from both sides of the bale, he soon had the finest running mill in the group, the production in the weave room came up to 20 per cent and the seconds were reduced to a small percentage. Help became plentiful and all grumbling about the work ceased.

About five years later a new superintendent took charge of the mill. He did not like the old carder from the beginning and soon changed for a younger man. The cotton grading received less attention and within a few months another superintendent came in and soon the old man was back on his job.

I mention this to show what a thorough knowledge of the business means to standardization. We find inch cotton grown in the western part of Limestone county, Tenn., near Fayetteville, will produce yarn that will break five to ten points above standard, while cotton grown in the Northern part of the county will not break up to standard by five to ten points.

In textile text books and in textile papers, we find instructions for twisting, drafting and roll setting. And in nearly every mill on the same length of staple, we find different twist, drafts and roll settings. We find some of these mills running bad where the overseers have "heads of their own" and no one can tell them anything.

"The wise men of the East." Did you ever meet one? If so you will remember it and will generally know him by looking at his work. It runs all right, but does not get results.

Now it is true that we can get more humidity in some mills than others. This will show up in the running of the work and in the quality of the yarn, especially in hot weather. We can set rolls alike in any and all mills on one inch cotton, but must open them wider as the length of the staple increases. Many prefer to set them middie and

(Continued on Page 43)

Have You Dobby Looms?
—If so you should be weaving
RAYON

Let us help you get started. The running of our own weave plants on fancies enables us to offer valuable assistance to mills anxious to participate in the increased profits afforded by Rayon.

It is not necessary to buy expensive winding machinery. We are prepared to deliver Rayon or Silk in all forms ready for the loom.

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SILK CORPORATION
COMMISSION DEPARTMENT

Southern Office
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Mills at
HAZLETON — DORRANCETON — NANTICOKE, PA.

Produced on the
No. 60-GF Universal
Winding Machine

LEESONA
REG. U. S. PAT. OFF.

"Uni-form"
Cones

"Uni-form" Hosiery Cone 6" Traverse, maximum diameter, 8" net weight of yarn, up to 3 pounds.

"Uni-form" Warping Cone 6" Traverse, maximum diameter, 8"—net weight of yarn up to 4¼ pounds.

Firm, Uniform-tension packages that afford the best possible delivery in mill practice.

Universal Winding has helped materially in effecting valuable economies and improvements in almost every branch of textile manufacture. The development of the No. 60-GF Universal Machine for winding "Uni-form" cones is one of several that directly concerns knitting mills.

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The Cotton Dress Campaign

Farm Women Endorse Campaign to Wear Cotton Dresses.

Rock Hill, S. C.—A resolution urging the women of South Carolina to observe the week of June 21-26 as "wear a cotton dress week" was adopted today by the South Carolina Council of Farm Women in session here.

Back to Cotton.

(Gastonia Gazette)

The "back-to-cotton" movement evidently begun in a spirit of levity is sweeping over the South with surprising rapidity.

The women of the South, if they desire it, have it in their power to make the fad a nation-wide custom. The idea of wearing more cotton goods is getting more publicity right now than any other domestic subject unless it be the drought.

Adverting to the move of the Charlotte Woman's Club, whose members went on record a few days ago as pledging themselves to wear at least one cotton dress this summer and to encourage the idea every where possible in the attempt to help the textile industry, The Wilmington Star says:

"There is something highly reminiscent about this forward step of Charlotte Club women. It is remindful of the days when Southern ermine garbed the belles of the old South causing the loss of not whit of that charm for which they were, are and will always be famous. This time, however, there is lacking the the inner circles of society, which spur that brought cotton goods into makes the initiative of the Charlotte ladies all the more significant.

Annual Cotton Ball Danced at Gastonia.

(Charlotte Observer)

Gastonia, N. C.—King Cotton, that deposed monarch who has suffered much abuse at the hands of silk and satin makers claiming to hold the favorite eye of Dame Fashion in these days, was given a healthy boost toward his rightful throne at the local country club Friday night when the Gastonia Interfraternity club entertained 200 or more guests at its first annual cotton ball. Ball room decorations, dancers' wearing apparel and prizes were made of cotton materials. Cotton was the word of the hour. One felt that the curtain had been rolled back half a century on Southern women, dancing and treading silks and satins beneath dainty feet.

Making cotton fashionable was the idea intended to be put over in big style by the fraternity men. Gowns worn by guests were fashioned of sheer voiles and crisp organdies, with trimmings of cotton lace and net. The girls never looked more charming. The men fitted neatly into the scene with their white suits of cotton or semi-cotton cloth.

The grand march at midnight was led by John O. Durham, the organization's president, with Mrs. Durham and Charles Marshall, Jr., club secretary, with Miss Faith Price, of Charlotte, assisted by Mr. Joe G. Separk and Miss Frances Robinson.

"Wear a Cotton Dress" Campaign Spreads in S. C.

(Greenville Daily News) ..

The "Wear a Cotton Dress" campaign, originating for the State in Rock Hill, is fast assuming State-wide proportions as many State organizations enthusiastically pledge their support and begin cooperation with promoters here, it was announced recently.

Joining the State Council of Farm Women in supporting the movement are the State organizations of the American Legion Auxiliary, the United Daughters of the Confederacy, and the Daughters of the American Revolution.

Pledges of support were received here today from Mrs. J Lyles Glenn of Chester, State President of the Legion Auxiliary; Mrs. T. J. Mauldin, president of the U. D. C., and Mrs. W. F. Mauldin, of Pickens, president of the S. C. U. D. C., and Mrs. W. D. Burney, State president of the D. A. R.

The Chester Merchants Association has also joined in the movement and promised all possible cooperation, it was stated. Many State organization leaders plan to ask Governor Thomas G. McLeod to issue a proclamation setting aside the week of June 28 to July 3 as a time for stressing the movement to save the cotton industry for the South.

Members of the State Council of Farm Women pledged themselves almost without a dissenting vote for the remainder of the season to wear no clothing except that manufactured from cotton. This body is one of the leaders in the movement, which received added impetus with its convention at Winthrop College here this week.

Cotton Garments To Be Advocated

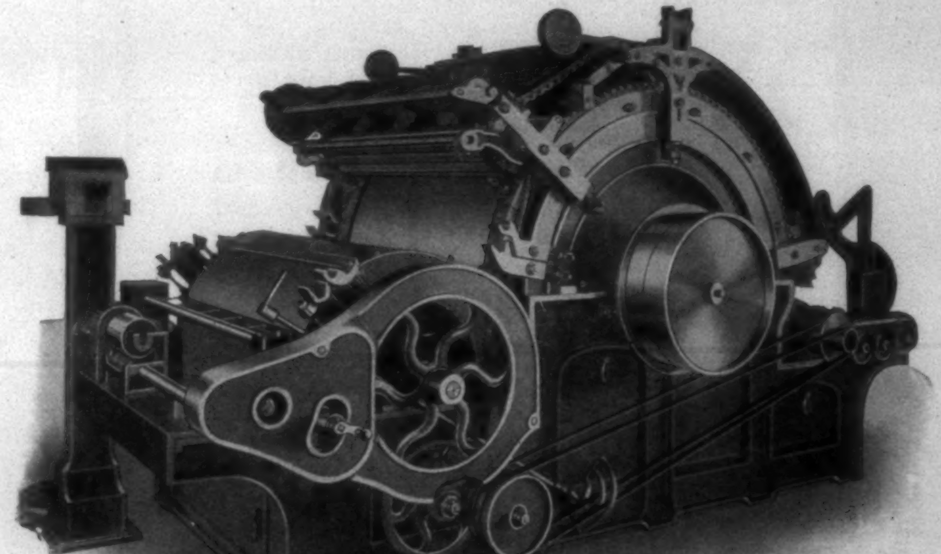
(Greenville Daily News)

While several of the Chambers of Commerce, including Rock Hill and Chester, are launching a movement for a State-wide campaign to popularize the use of cotton smocks as an outer garment, the Greenville Junior Chamber of Commerce has begun a nation-wide publicity campaign, aimed to accomplish the same purpose.

This campaign by the Juniors of the city will be launched in Jacksonville when the delegation from this city will appear in the Florida city wearing varied colored cotton smocks while attending the national convention of the United State Junior Chamber of Commerce.

Delegates from hundreds of cities over the country will be present at the convention. It is for that reason the Greenville Juniors hope to secure national distribution of their smock publicity.

H. & B. AMERICAN MACHINE CO.
Pawtucket, R. I.
Southern Office: 814-816 Atlanta Trust Co. Bldg., Atlanta, Ga.



INVESTIGATE THE MERITS OF OUR LATEST MODEL IMPROVED

Revolving Flat Card

Containing many valuable improvements, including the Rigid Bend, mathematically correct at all stages of wear of the wire. Patented Flat Stripping Motion, Adjustable Cylinder Pedestals, and many other features worthy of your investigation.

Send for Special Bulletin with List of Users

COTTON MACHINERY

HOUGHTON

If You Have Not Strength Enough of Your Own to Hold On, Get Some Other Fellow to Help You.

A Sermon

by Chas. E. Carpenter,

Near Editor

YOU can't make the poor rich by making the rich poor.

You can't climb up by pulling the other fellow down.

If there be something of which you have a surplus and you know another fellow needs some of it, loan it to him.

If you are short of something that you need, borrow it from some one who is well supplied.

These are the well-known principles of the Golden Rule, upon which HOUGHTON'S ABSORBED OILS are built.

The lubricating properties of HOUGHTON'S ABSORBED OILS come from just a first-class lubricating oil and all that oil is asked to do is to make things slippery. The film oil, which is not asked to contribute to the lubrication at all, but merely asked to keep the lubricated surfaces from coming in contact, absorbs the lubricating oil in its pores and holds it in place where it can function.

Thus you do not have to sacrifice real lubricating properties for stickiness, or viscosity.

Oil men speak of viscosity as a virtue in a lubricating oil. It is not; it is merely a necessary evil. Viscosity retards lubrication, but it gives the oil that property which holds it in place.

HOUGHTON'S ABSORBED OILS do not depend upon their viscosity for their lubricating properties.

There is no oil drip with HOUGHTON'S ABSORBED OILS and therefore oil stains are practically obliterated.

HOUGHTON'S ABSORBED OILS are in large general use in the textile mills of the United States, Great Britain, France and Japan and are making rapid strides in Italy.

Remember, if you please, that they lubricate better at half the cost and it is estimated that they more than save their entire cost by saving in repairs alone.

It is not necessary to electrify your mill to avoid oil stains, if you use HOUGHTON'S ABSORBED OILS.

Trial drums sent on approval.

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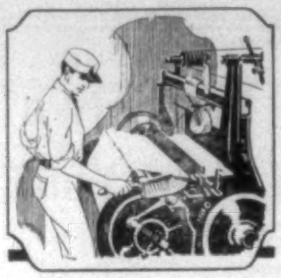
AND ALL OVER THE WORLD

Oils and Leathers for the Textile Industry



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He Brushes with a Smile

The human factor is even more important today than it was in the old hand loom days. Better cloth comes from the modern loom when the operative works with a smile. Loom dusting brushes, comber brushes, which are built with comfortable handles and set with bristles or fibres which wear and wear without getting out of shape or shedding, help keep this profitable smile on your employee's face. Perkins' Practical Brushes are the kind of brushes which bring this smile of satisfaction.

The Purchasing Agent smiles, too, because he knows that the volume of Perkins' Practical brushes used by the cotton mills in the South, makes possible low first cost and guarantees longer-life quality.

Have a smile with your next brush order by buying Perkins Practicals.

ATLANTA BRUSH CO.
ATLANTA, GA.

Guaranteed
Textile
Brushes

Little—But Oh My!

Ring travelers are, in size, about the smallest accessory in the spinning mill. But one of the most important. If they are just ordinary travelers, you may have lots of difficulties. But if they are Victors, you never know they are there, for VICTORS are made to be as near trouble-proof as is humanly possible.

We'll gladly send you a generous supply of FREE samples if you'll tell us what styles and sizes you wish to try. Write today.

VICTOR RING TRAVELER COMPANY
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Southern Agent
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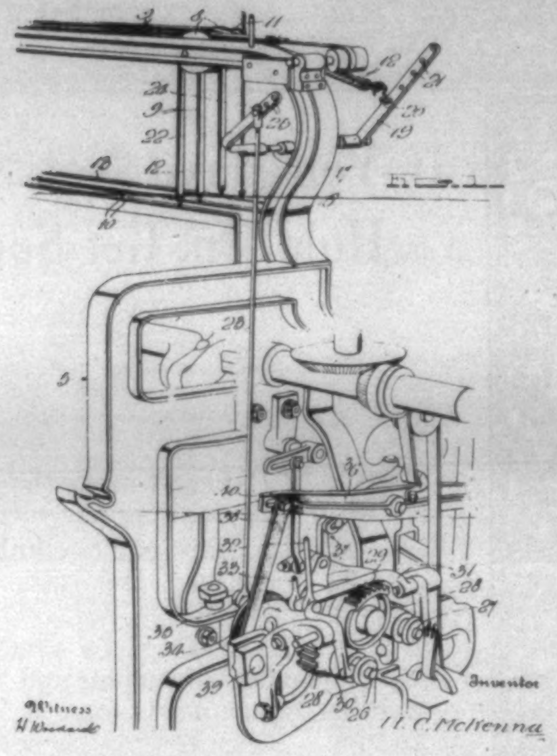
Gastonia, N. C.

New Method of Weaving Madras



Patent Drawing of McKenna Madras Attachment.

Howard C. McKenna of the Planters and Merchants Mill, New Braunfels, Texas, has developed a plan of weaving madras by which the extra harness which weaves the silk is operated by the box motion. The weaving is done on a 4-box Crompton & Knowles automatic two harness loom.

The connecting lever from the intermediate to the disc crank is removed and the intermediate is fastened to the box motion frame by a brace. The disc crank is then used to operate the extra harness, the weave being built on the box chain.

One to two shuttles may be operated in the usual manner and any desired weave of the extra harness is possible so long as it is a multiple of two for e.g. 6/2 4/4 2/4, etc.

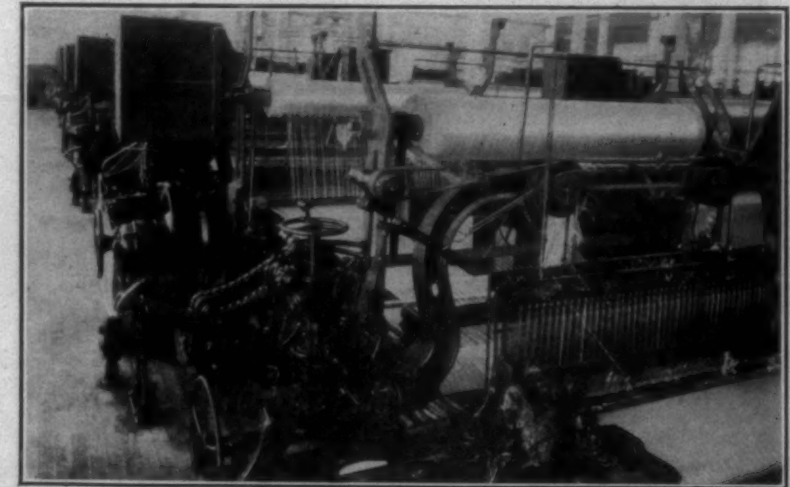
His mill has had 60 looms running this way very successfully night and day for a year, twelve looms to the weaver. The cost of installing this motion was but a few dollars per loom.

To change back to 4 shuttle gingham, it takes but a few minutes to remove the brace connecting the intermediate with the disc crank.

One of the attached cuts shows the attachment in operation and the other is from the patent papers.

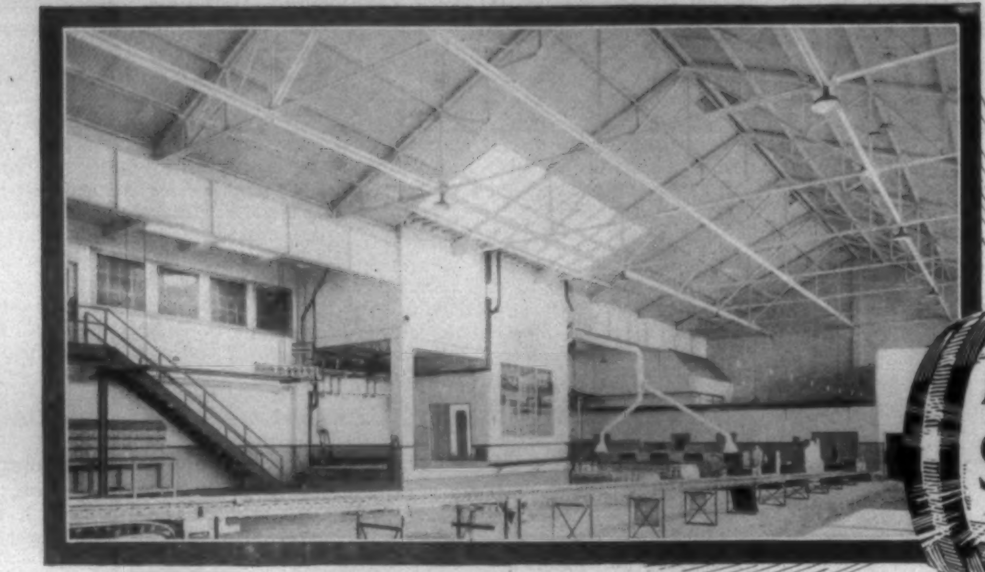
Mr. McKenna's weaving plan has already attracted a great deal of attention and has proved very interesting to a number of weavers who have had an opportunity of seeing it in operation.

The Planters and Merchants Mills, one of the newer plants in Texas, has a total equipment of 10,000 spindles and 350 looms, producing a line of ginghams, madras and rayon dress goods.



Application of McKenna Madras Attachment.

Clean, lustrous, lasting white paint



Thousands of industrial plants find the superior qualities of Barreled Sunlight an actual economy in interior painting

at the lowest cost per sq. ft. of surface covered

A CHECK-UP among hundreds of textile mills has shown that Barreled Sunlight does the finest possible job of interior painting—and does it *at an actual saving.*

The labor cost of application is less because Barreled Sunlight, containing no varnish, flows on freely with brush or spray—and covers remarkably.

Repainting costs are far lower, too. Once on the ceilings and walls, this paint is good for years of service. Its satin-smooth surface offers dirt no foothold, so that washing takes the place of frequent repainting. And it is so durable that repeated washings will not wear it away.

Made by the exclusive Rice Process, Barreled Sunlight is guaranteed to remain white longer than any gloss paint or enamel, domestic or foreign, applied under the same conditions—also not to flake or scale if properly applied.

Plant lighting is always improved with Barreled Sunlight. Its lustrous surface reflects just the right quantity and *quality* of working light—free from glare.

In a word, *lasting cleanliness with real economy*—that is why textile mills everywhere today prefer Barreled Sunlight to any other paint for their ceilings and walls.

Barreled Sunlight is sold in 55- and 30-gallon churn-equipped steel drums, and in cans from ½ pint to 5 gallons. Where more than one coat is required, use Barreled Sunlight Undercoat first.

For exterior painting, use Rice's Reinforced Paint, a scientifically machine-made paint in pure white and unusually clear, well-defined colors. Used by textile mills everywhere.

Use the coupon to obtain illustrated booklet and panel painted with Barreled Sunlight.

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Please send us your booklet "More Light," and a panel painted with Barreled Sunlight.

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Program for Georgia Meeting

Atlanta, Ga.—Several hundred textile executives from all parts of Georgia are expected to assemble in Atlanta Monday and Tuesday, June 21 and 22, for the twenty-six annual meeting of the Cotton Manufacturers' Association of Geargia, which will be held at the Biltmore hotel and the Druid Hills Golf Club. Officials of the association have been at work for some time in the program for the convention, which promises to be one of the most important ever held by the organization.

George S. Harris, president of the Exposition Cotton Mills of Atlanta, is president of the Georgia association, and under his direction a comprehensive program of business has been arranged, which will include addresses by prominent industrial and social leaders on such matters as business conditions, employee relations, insurance, marketing advertising, education, agriculture and health. For the entertainment of the delegates, luncheons and dinners have been arranged as well as a special golf tournament for delegates who desire to participate. The annual banquet will be held at 8:30 o'clock Tuesday night at the Druid Hills Golf Club, with President Harris as toastmaster. Women attending the convention will be delightfully entertained during the business sessions, and will also attend the annual banquet as guests of honor.

The convention will open Monday evening at 8:30 o'clock at the Biltmore hotel, with President Harris presiding. A discussion of the child labor laws led by Fort E. Land, State superintendent of public schools; and talks on child labor by Hal M. Stanley, state commissioner of commerce and labor, and Paul McKinney, vice-president of the Swift Manufacturing Company, of Columbus, will feature the first session. Other addresses on Monday evening will include that of Sharp Jones, secretary-treasurer of the Industrial Commission of Georgia, on "Safety in the Mills;" and that of Miss Mary Dickenson, secretary of the Georgia Tuberculosis Association on "Health Welfare."

The Tuesday morning's session will open at 9:30 o'clock at the Druid Hills Golf Club with Norman E. Elsas, secretary of the Fulton Bag and Cotton Mills, of Atlanta, delivering the address of welcome, and M. M. Brown, secretary-treasurer of the Jefferson Mills, Jefferson, Ga., making the response. President Harris's annual address to the textile executives will be delivered at this session, and it is generally understood that at this time Mr. Harris will discuss the movement to bring about a stabilization of the cotton industry through the establishment of a great national institute for research purposes.

Other important talks at the Tuesday morning session will be an address by Dr. A. M. Soule, president of the State College of Agriculture, on the "Necessity of Improvement of the Grade and Staple," and a talk by W. J. Vereen, of Moultrie, Ga., on the work that has been done by the special committee, appointed to meet with the national council in regard to formulating remedies for modern mill problems. H. R. Fitzgerald, president of the Dan River Mills, at Danville, Va., will follow with a speech on "What is Takes to Put It Over."

The remainder of the forenoon sessions on Tuesday will be devoted to hearing reports from the secretary, treasurer, the traffic manager, and important committees. In the afternoon the nominations committee will meet, and make nominations for new officers. Tuesday afternoon will be given over to entertainment of the delegates and their guests.

Textile Chemists and Colorists to Meet

The Southern Section of the American Association of Textile Chemists and Colorists will hold its summer meeting at the Green Park Hotel, Blowing Rock, North Carolina, on Saturday evening, July 17, 1926.

James H. Purdy, general manager of the Southern Worsted Corporation, Greenville, S. C., will discuss the subject—"Making, Dyeing and Finishing Worsteds in the South;" Mr. Purdy is the head of the largest all-worsted plant in the South and will have an interesting story for those present.

C. W. Gaddy, superintendent and manager of the Knitting Department, Wiscassett Mills, Company, Albemarle, N. C., will discuss "The Making and Dyeing of Full Fashioned Hosiery." The production of full fashioned hosiery is a comparatively new phase of the South's knitting industry, and Mr. Gaddy's message will certainly be received with a great deal of interest by the hosiery contingent in attendance.

A moving picture illustrating the manufacture of dyestuffs in the Deepwater, N. J., plant of E. I. du Pont de Nemours & Co., will be shown, and explained by W. L. Van Riper of the du Pont Wilmington office. This picture has created much comment wherever shown, and is sure to prove extremely interesting and entertaining.

The arrangement committee is composed of Chas. H. Stone, chairman, B. S. Phetteplace, P. F. O'Neil, W. M. Hunt, L. L. Bamberger, G. H. Dubois.

The Wear-Cotton Clubs.

The Wear-Cotton-Clubs need a rallying cry and a song. The Wilmington Star suggests these lines from James Whitcomb Riley as the marching song:

I can see the old sunbonnet
And the checkered gingham dress
You wore when I first kissed you,
And you answered my caress.

—Raleigh News and Observer.

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BEAM DYEING MACHINES

As developed by

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STANLEY, N. C.

WARPER TENSION CONTROLS

Essential to good Beam Dyeing

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We do all classes of Beam Dyeing. Direct, Sulphur and Vat colors, level, even and economical. You are invited to visit us and inspect our work.

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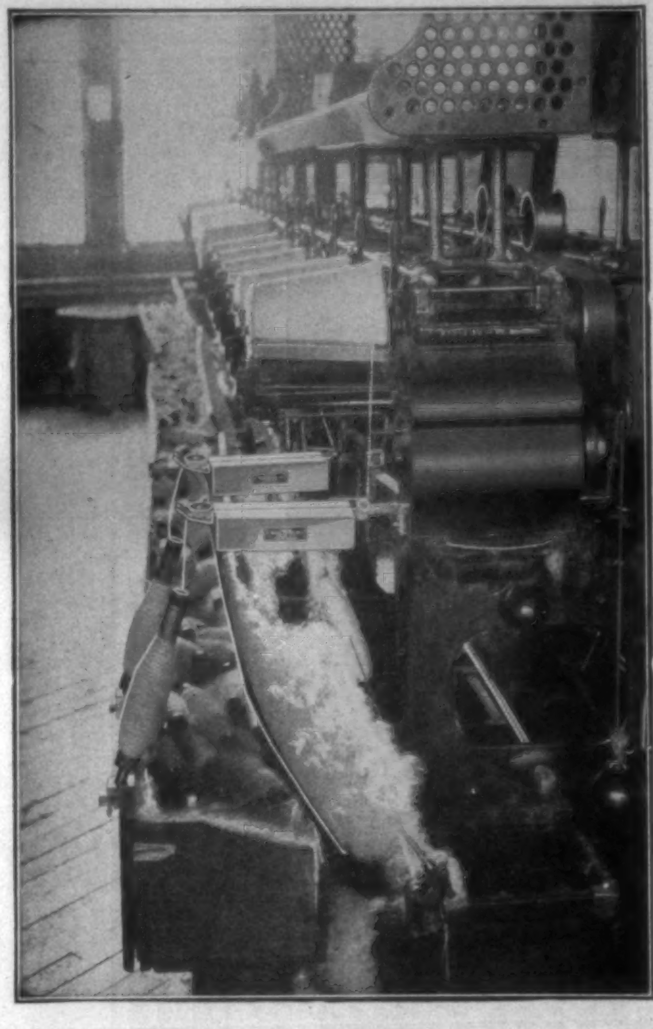


The Truth About Slubs

It does not require inventions to make slubs, but often they are made, and that is another story.

We wish to tell you that the Eclipse Automatic Yarn Cleaner is sure death to slubs. The Eclipse Cleaner not only catches all the slubs but thoroughly removes all the dirt in the yarn.

Many knitting mills and spinning plants realize the extreme value of the Eclipse Cleaner, and are equipping their entire winding capacity with the Eclipse Cleaners. The basic principle of good knitting and weaving is thoroughly clean yarn.

Why make yourself believe you are getting the best results when you can absolutely improve your yarn with the Eclipse Cleaner.

The Eclipse Cleaner is easily attached to your winder. It does not add any additional cost to your winding costs. Upon request we will cheerfully give you a demonstration.

Eclipse Textile Devices, Inc.
Elmira, N. Y.
Makers of
Automatic Yarn Cleaner, Automatic Stop Motion, Yarn Tension Device
Eclipse Van Ness Dyeing Machine

Cotton Mill Processes and Calculations

By D. A. Tompkins.

Copy Revised for Third Edition.

(Continued from May 6th)

Cone and Tube Winding.

388. For knitting and some other purposes yarn is required in "cones." These are made on the "cone winder," which is a machine with horizontal revolving cylinders or drums. Bobbins from the spinning frame or twister are put vertically in the creel below the drum, one bobbin for each winding drum. There is a mechanism for holding a conical paper tube in contact with the revolving drum. The yarn is attached to the tube, and winds on it by contact with the revolving drum. A traversing motion moves rapidly back and forth and guides on the yarn in crossed layers, thus winding a firm cone usually about 8 inches long and 5 inches diameter at one end and 7 inches at the other, weighing about 2 pounds. The same machinery may wind the yarn in cylinders instead of cones. This is generally called a "tube" of yarn. The cone winder may also be arranged to take yarn from skeins instead of from bobbins.

389. The machines have drums on each side, and may be made with any number of drums. One hundred drums is a common size. Such a machine is about 4 feet wide and 30 feet long, weighs about 6,000 pounds.

One drum will wind the yarn made by 15 to 20 spinning spindles.

The above relates to the ordinary drum winding machines, which produce what is known as "open wind" cones and tubes. That is, the yarn crosses and re-crosses indiscriminately making a somewhat soft package.

Another form of machine, with special traversing motion makes what is known as "close wind" cones and tubes. That is, the layers of yarn lie evenly side by side, like sewing thread on a spool, except that the layers run diagonally and thus cross each other to make a firm and self-supporting package. This is much more dense than the open wind, and hence a larger number of pounds may be packed in a case of the same size. These machines occupy less space per pound of production; and it is claimed that the cost of operating is less. The first cost of the machines is very much more per spindle.

SPECIFICATIONS.

CHAPTER XV

Organization and Equipment

391. The term "organization" is a somewhat ambiguous one, when relating to cotton mills. It might mean the arrangement and composition of a corporation. But the technical significance relates to the physical arrangement of machinery in proper details to make some certain kind of product.

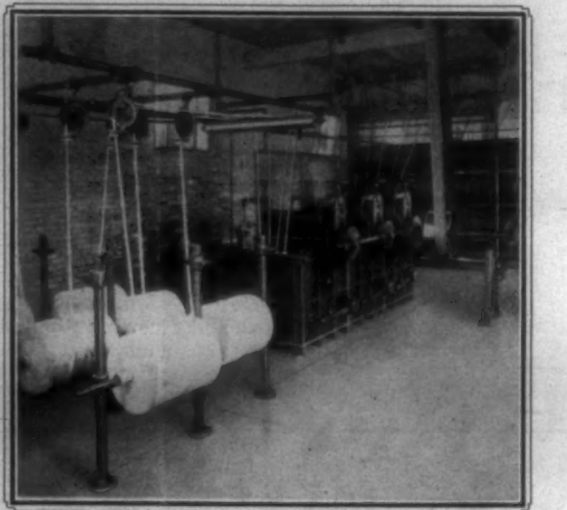
It is always desirable to lay out the organization sheet, in the case of a new mill, before any work is done on the drawings or the plant. Equally in the case of remodeling an old mill, or of making a considerable change in the work to be done by an old mill, the organization for that work should be carefully drawn up.

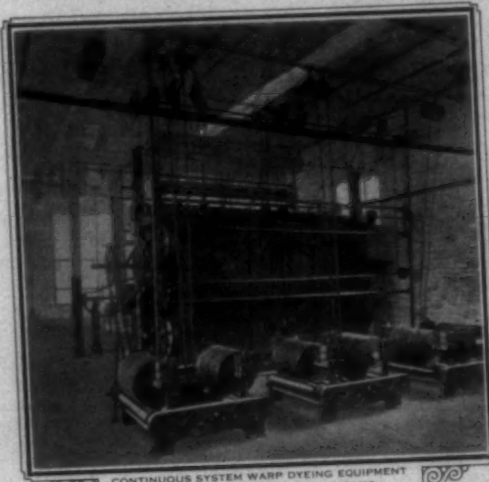
392. Having as a starting point a certain piece of cloth, or a certain kind of yarn to produce, it must be determined what combination of machinery is necessary to produce the result,

(Continued on Page 35)

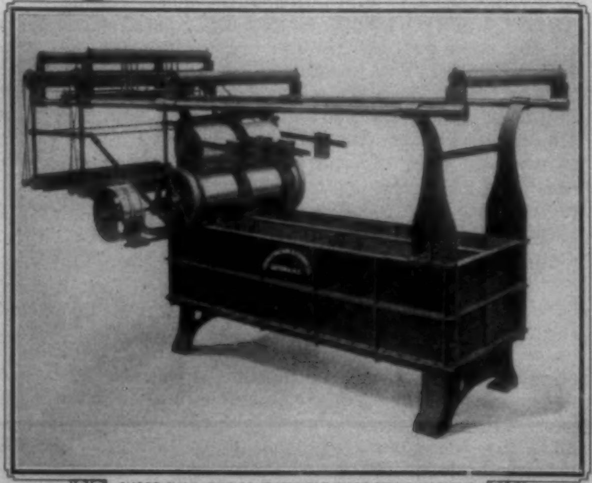
Warp Dyeing and Sizing Equipment

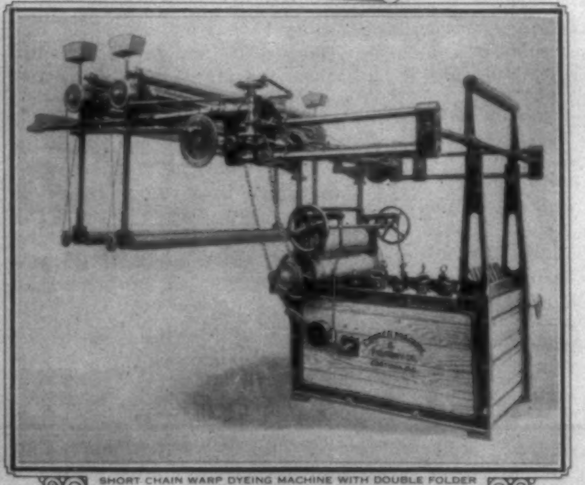
ONE RUN CONTINUOUS SYSTEM WARP INDIGO DYEING EQUIPMENT


THREE COMPARTMENT MACHINE CONTINUOUS SYSTEM WARP DYEING EQUIPMENT


CONTINUOUS SYSTEM WARP DYEING EQUIPMENT BALLING SIX WARPS FROM DRY CANS

FIVE COMPARTMENT WARP DYEING MACHINE


SHORT CHAIN TWO-COMPARTMENT WARP SIZING MACHINE


SHORT CHAIN WARP DYEING MACHINE WITH DOUBLE FOLDER AND PLAITING DOWN MOTION

The accompanying Cuts illustrate only a few of the many different standard and special Machines which we build for handling the Dyeing and Sizing of Chain Warps.

We build the most complete line of Machinery of this kind that is used in Dye Houses, from the simplest and smallest Single Compartment Machines on a Short Chain System of Dyeing up to the largest Machines ever built by any concern in the World for handling Warp Indigo Dyeing for Denims on a Long Chain System.

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Gastonia, N. C.

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Practical Discussions By Practical Men

Break Draft.

Editor:

For a break draft on spinning frames, between the back and the middle rolls, what is the safe limit?

Park.

Why Good Roving Breaks Back.

Editor:

I am much puzzled as to why good roving breaks back. There doesn't appear to be anything the matter with the roving I get from my brother overseer carder and yet it breaks back. Will some reader answer my question through your valuable forum and I will feel obliged.

Spinner.

Pick Counters on Looms.

Editor:

I would like to ask a question through the Discussion Page regarding pick counters on looms. Will some one give me an example showing how to figure weavers' wages on them. They run night and day, registering each shift separately; 40 picks, 40-inch, 4.25; 40-inch, 44 picks, 6.41 and 36-inch, 48 picks 4.00.

No. 410.

Answer to Young Spinner.

Editor:

In answer to the question by Young Spinner as to the average number of yarn, the rule is:

Multiply the number of pounds produced by each frame by the counts of the yarn being spun. Add the result thus obtained and divide by the total number of pounds.

Information.

Answer to Finisher.

Editor:

In answer to Finisher regarding his tentering frame problems, will say that he can ascertain all that he has asked about, without taking the chains out.

First, to see if one is longer than the other without being obliged to count the links in each chain. Mark a spot on each side of the tenter frame at an equal distance from the end. Mark each chain on these terminals. Now start the tentering frame, and let it operate closely until each chain has made one complete trip around. If these same marks on each chain tally with the marks on each side of the tentering frames, then the two chains are exactly of the same length.

Second, to see if the chains are binding, see if you can turn the frame over by hand power.

Third, to see if the chain links are over-worn, see how much back lashing there is in each chain, by fastening a rope to the foot end of each chain. Now make certain that the head end of the machine is pulled up tight on the chain and block the gears. Now, mark the foot end of each chain and also place a mark opposite each chain mark on the tentering frames. Now, pull up tightly on each chain rope. The next thing is to see how much each chain has been moved or pulled away from each mark. In this way it can be ascertained how much each chain is worn, also how much more one chain is worn than the other.

Machinist.

Answer to 840.

Editor:

Number 840 has asked a very good question regarding the constant number, 840. While the question appears simple, it is a fact that the writer has never seen an explanation of this term in the textile papers generally. The constant number 840 means 840 yards. It was originally made up of seven (7) bobbins from which were reeled off 120 yards of yarn each. (120×7=840 yards). These 840 yards were weighed and if they weighed exactly 7000 grains this yarn was called number one (1) yarn. There are 7000 grains in a pound avoirdupois. Or if 120 yards weighed 1000 grains the result was the same. So the figures or the constant number 1000 did also figure into the proposition as a constant number. The constant number could not be a constant number and have a constant answer. That is, let us suppose that the originator of our standard system of yarn numbering had taken as his yard unit 1000 yards. Say ten (10) bobbins and reeled off 100 yards from each, and if this weighed exactly 7000 grains to call it number one (1) yarn. We would have had fractions and broken numbers in our answers just the same. 840 has worked out very well in our textile system of yarn numbering, and it has been less troublesome than many other constant numbers, such as used especially in the metric system of weights and measures.

For convenience, most spinners use only four bobbins from which to reel off 120 yards each. In this case the total weight of these is divided into 4000 in order to get the yarn number. If one bobbin is weighed at one time the weight in grains is divided into 1000 to ascertain the yarn number. Some spin-

(Continued on Page 33)

Causes of Bad Spinning

A series of articles contributed to a Prize Contest on this Subject

Number Twenty-eight

The first cause of bad spinning is that too many bales of short cotton are mixed in long cotton, or too much long cotton mixed with short. Another trouble is too much twist in the roving, which will not allow it to draft, causing it to pull through, which is known as hard ends. Another defect in the roving is lack of enough twist to allow it to be drawn from the bobbin to the guide and rollers in this case, the first thing I would do would be take the matter up with the carder and have him put the standard twist per inch in the roving.

Another source of trouble is having your rollers set too close. In this case, look to your roving when you are setting rolls. If the roving is hard twisted, set the rolls further apart. If the roving is soft, set the rollers closer. Keep your rolls in good condition and remove all poor ones. Keep the rolls well oiled.

Another cause of bad spinning is that the spindles are not running true and not leveled and properly oiled. You should have a first class spindle plumber level and true all spindles and see that the steps are not worn and that the spindles are in good shape.

Bad spinning will also result if the rings are worn. This will cause the traveler to cut the ends off. This condition should be remedied by replacing worn rings or turning the old ones over on the other side which may not be worn. The travelers may be too heavy or too light for the numbers being spun. The first thing to do in this case is to put in the right traveler and weigh it. For example, 5-0 should weigh 14 grains per 20 travelers. Another cause of bad spinning may be that the bands in the frames are too tight or too slack. This condition will always cause bad spinning.

Tedd.

Number Twenty-nine

To make a good strand of thread you have first got to have a good, smooth strand of roving. Roving that is twisted too hard will cause ends to come down and slugs, singlings and doublings in roving are very bad things. They will make spinning run bad.

The spinning will be found to run bad from the following causes: Frames not leveled, Sampsons not leveled, spindle base rail not leveled, ring rail not leveled, steel roll stands not properly set and steel rolls not properly set and adjusted in stands; roller bars not properly set and adjusted; roving traverse not properly set and adjusted so that it will have it's full stroke on rolls and not run out at ends of roller or middle of roller; spindles not properly set and adjusted.

Spindles should be set at bottom and then run rail to top of the bobbin. Any spindle then not found to be in the center of ring should be papered. A good smooth paper should be used, as a coarse surfaced paper will absorb oil and soon be soft, allowing spindle base to lean and spindle to become out of center. This should be done at least once each year. Bolsters should be kept in good condition so there will be no strain or pull on the spindle. Spindles should have a good point on them, and if your are using adjustable inside bolster you may loosen or tighten by removing spring and when using solid bolsters and they become worn they should be replaced with new ones. See that your rings are in good shape, all that are worn should be turned over and properly cleaned. If you are using a double flange ring, clean with light spindle oil taking off all rough edges. If this cannot be done, then they should be replaced with new ones.

After taking rings out for cleaning, or old ones being replaced with new ones, the spindles should be set to the center of ring. Be sure you have the right traveler, right circle, right size and right width, for the traveler plays an important part in good running spinning. Travelers should be changed every two weeks on coarse numbers of yarn, if you have a No. 2 flange ring and are running square pointed traveler. If on fine numbers of yarn with a round pointed traveler, they will change themselves. By flying off). See that your rings are not too large for the numbers of yarn you are making and for the size bobbin you are running for that will cause end to pull tight and not have its proper tension. See that your stroke on traverse is not short or too long for size of bobbin. Traverse running too fast or too slow will cause your ends to pull tight or lash down. Lifting rods brushing should be kept cleaned out and this will prevent having stuck rods, for when a rod sticks at top of bobbin traverse will continue its motion leaving rail at top of bobbin causing ends to come down. And when a rod sticks at bottom that will cause a ridge, or a ring around the bobbin that will cause the ends to run bad.

Se that you separators are properly set and adjusted to center of ring holder and center of each guide lead. All separator blades should be smooth and have no rough places on them. When ends lash against separator blades they will catch and break down. Guide wires not properly set and having grooves and rough places on them will cause ends to break down. Guide wires should be set so that the point of the set will touch the back of the opening on the the inside. Steel rolls not properly set will cause bad running spinning. To get the best results steel rolls should be taken out and cleaned once each year and while you have them out they should be gone over to see that steel roll necks are in good condition and all flutes are cleaned out and that all flutes are smooth. If they have rough places on them, have them refluted or use a small steel roll file in each flute and then polish them with pumice stone. That will keep roving from lapping around steel roll. Watch your drafts when setting steel rolls. If a small draft set your rolls further apart and if large draft set your rolls nearer. Always take in consideration when setting rolls, whether the feed is heavy or light, for heavy set rolls further apart, for light set nearer. Look to your roving when setting rolls. If it is hard twisted set the rolls further apart. If the roving is soft set nearer. Never have top leather rolls the same diameter as the fluted rolls for if they are the leather will become fluted. The leather rolls should have a good cushion. Put on first and smooth down, then put on a good calf skin that is good and smooth so the surface will be in good condition. This will help to make ends run good. If they have lumps on them they won't run good for every time the ends come to the lump on roller, down comes the end.

Thread boards should set at a height of 1½ inches above bobbin tips. In other cases where conditions are different for making the same yarn, the operations would not be successful unless the thread boards are set at least 2¼ inches above the bobbin, tips may be 2½ inches high. Having this greater difference will take care of your broken ended bobbins so the thread will not catch or hang on them. It is well to remember not to get thread boards too close to end of bobbin or tip of bobbin either one, when you are running a heavy traveler.

Another important thing to remember is the saddle stirrup levers and weights. They should be adjusted as follows; front saddles should be set so the stirrups will be in position not to rub against front or middle steel roll. If they should rub that would cause roving to run out at end of rollers and will make the roller bind and not have its full swing. Lever screws and levers should be leveled so that weight wires will not touch back guide board. The levers should be about 1½ or 2 inches above the back guide board. This will give a good full swing for the weight or roller. Roving skewers should be kept in good condition so that they will not cause roving to break back or pull too hard for that will have tendency to stretch the roving and make it weak. That will cause ends to come down. Roving sets must be kept in place. Broken ones should be replaced by new ones for this will cause roving to pull tight and ends won't run good.

Another important things is the cleaning and oiling system. Sweepers should keep floor clean at all times and should never use fan rags or blow pipes. They both are injurious to spinning. They will cause more ends to come down than a half dozen good spinners can keep up and when a sweeper fans from under frames with these two objects, the cotton will fly and catch on to the threads and ends will not pass through traveler causing end to come down. Clean all lap sticks every doff. Keep pins in ends of lap sticks cleaned off at all times. This will prevent lap rolls from stopping and when an end comes down it will run around lap stick and not go around the leather roll and choke it up. Front stand should be cleaned every day with cotton and fingers and once a week with a copper wire hook.

Back guide boards should be wiped twice daily and wipe under lap roller weights when wiping back guides. Wipe bottom roving twice a week, top roving three times a week lifting up every stick. When wiping steel rolls and back stands should be cleaned every week removing all cotton. Top clearers on slats should be cleaned from two to four times daily according to the numbers yarn you are on.

The next important thing is the oiling question. Spindles should be oiled every two weeks on slow speed, but on fast speed they should be oiled every week with a good, light medium spindle oil. Front steel roll stands should be oiled twice daily. Back steel roll stands should be oiled each week. Back steel roll stands should be oiled once each week. Front saddles and rolls should be oiled once each day. Humidity should be kept about ten degrees apart from dry bulb and wet bulb in dry weather and in wet weather 14 degrees apart. Keep them from 66 degrees wet bulb and from 75 to 76 degrees dry bulb, for I think humidity is important to have in spinning. It should be looked after.

Another thing that is important is the gears, such as crown gears, draft gears, front steel roll gear, back steel roll gear, middle steel roll gear. If they have broken or worn teeth it will cause your steel roll to quiver and jump and make ends run bad.

R. J. L.

Number Thirty

Some of the causes of bad spinning are worn machinery, but we will assume that the machinery is practically new. In this case, the following things will cause bad spinning:

Rolls not properly covered and worn top and bottom rolls, travelers too light or too heavy, numbers running on the light or heavy side, spindles in need of plumbing, frames in need of lining and leveling, rings worn, rusty, cracked or not round; diameter of rings too great for number of yarn being spun, guide wires worn and not properly set, speed too high, draft too long or too short, too much or not enough twist, clearers not cleaned often enough, bolsters worn or dry, bobbins not true or not fitting the spindles, too much or not enough humidity, careless cleaning, slack bands, roving stands worn, high end piecing on filling motion; speed too high, bands too small for grooves in whorl, draft gears worn or too large, crown

(Continued on Page 24)

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Visiting Spray, Leaksville and Draper

By David Clark.

I HAD a very interesting and enjoyable visit to Spray, Leaksville and Draper last month, but have been greatly delayed in writing an account of my trip. The day after my return I had my tonsils removed and was in the hospital or at my home for a week and then came the meeting of the American Cotton Manufacturers' Association at Atlanta and business matters requiring my absence from Charlotte.

When I finally sit down to write the story I find that my notes have in some way been misplaced and I am compelled to write entirely from memory which means that some details and some names will be omitted that should have been included.

I had been invited several times to address the monthly meeting of the Carolina Cooperative Council, which is composed of the superintendents, overseers and second hands of the Carolina Cotton and Woolen Mills, at Spray, Leaksville and Draper, but somehow I had always had conflicting engagements. When this invitation came I was very glad to accept same.

As there is a hard surface road all the way from Charlotte to Spray, I first intended to drive through, but finally decided to go by train. I left Charlotte at 4 p. m., May 5th and reaching Reidsville at 10 p. m., spent the night there and next morning went by bus to Spray, reaching there about 9 o'clock.

In the office of the Carolina Cotton and Woolen Mills, I found Luther Hodges. Luther does not seem to have a job with any title. He was formerly known as the personnel officer and he has probably given more study to the matter of labor turnover than any man in the South. He is now the assistant to L. W. Clark, general manager of the mills at Spray and Draper, but still has supervision of the personnel records. My acquaintance with Luther Hodges has been due to a considerable extent to his activities in Rotary Club circles.

A short time after my arrival, L. W. Clark came in and he devoted practically the entire day to showing me the mills.

Mr. Clark, after graduating at a textile school in the North, accepted a position at the Mississippi Textile Mills, at Wesson, Miss., now dismantled, but not liking the conditions there, made application to a number of mills for the position of designer, a practically unknown position at that time. Among those to whom he wrote was the Cone Export and Commission Co., at Greensboro, N. C., and more than a year later they decided to employ a designer and offered Mr. Clark the position.

His first work was styling one of the plaid mills at Burlington, N. C., which was regarded as a new idea.

While with the Cone Export and Commission Co., Mr. Clark was associated with B. Frank Mebane and when Mr. Mebane established the mills at Spray Mr. Clark went with and when they were later acquired by the Marshall Field interests, Mr. Clark was retained as general manager of the several mills at Draper and Spray and has made good.

Leaving the office at Spray with L. W. Clark we drove first to Draper, about three miles away, when we found General Superintendent T. A. Caston, who accompanied us through the Draper-American Mill and the Wearwell Sheeting Mill. I had always had the idea that there were two separate mills at Draper but found that they were only separate departments, the looms of both mills being located in the same weave shed.

The Draper-American Mills weave cotton blankets, while the Wearwell Sheeting Mill makes bed sheeting and pillow tubing.

It was evident that both plants were very efficiently operated under the management of Mr. Caston.

I was especially interested in the process of making blankets. The filling is made largely of short staple China cotton which is dyed in the raw stock and is carded and spun on the wool system. From long experience they have become very efficient in handling such systems and I doubt if any blanket manufacturer is doing better work.

Most of the blankets are woven on jacquard looms but a few have plain weaves.

After being woven they have to be napped and then carefully finished, inspected and packed. They make a beautiful line of cotton blankets and their Wearwell bed sheeting is of high quality.

In the inspecting room I met a brother of Superintendent Caston, and as I went through the spinning room I met the overseer, H. J. Christley, whom I have known for some time.

In passing through the lapper room of the sheeting mill I noticed that they were spraying the cotton with Breton Minerol oil. It had been reported that they had discarded the oil spraying but they said that they had found it very satisfactory.

Leaving Draper we went back to Spray and drove to the Rhode Island Mill. While all of the mills are part of the Carolina Cotton and Woolen Mills, they are each known by their former names.

The Rhode Island Mill is in charge of Chas. W. Phillips and manufactures cotton blankets, while the Spray Woolen Mills, which we next visited, is in charge of W. J. Slayton and manufactures wool blankets.

My visit to these mills following the visit to the Draper-American Mill at Draper gave me an idea of hte volume of blankets produced by the Carolina Cotton and Woolen Mills.

Blankets have to be sold a long ways ahead, delivered during the summer, and the bills dated the following October and November.

It would require someone with the financial ability of the Marshall Field interest to finance the blankets manufactured at Draper and Spray.

The volume of their blanket business is far greater than I had imagined and is so large that a portion of their output is sold outside of Marshall Field & Co., which is not the case with any other textile product they manufacture.

Blanket manufacturing is a specialty that requires knowledge and long experience, both of which they have.

After leaving the Rhode Island Mills and the Spray Woolen Mills

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we went back to the office and left the car, as the Nantucket and the Lily Mills are just across the railroad from the office.

We went first to the Nantucket Mill, where we met Will Carter, who is manager of that mill and the Lily Mill. Later we met G. M. Lamar, who is superintendent of both mills.

The Nantucket Mill is a gingham mill but is now making some fancy goods from cotton and rayon and pure silk. They were weaving some especially pretty rayon goods with panel effects down the middle.

The Nantucket is a very well equipped mill and showed evidences of efficient management.

The Lily Mill manufactures similar fabrics to the Nantucket but also has a pure silk weaving room with about twenty looms which were installed as an experiment.

So successful, however, have they been in weaving pure silk that they are hoping that a silk mill which the Marshall Field interests have in New Jersey will be moved to Spray.

Returning to the office, I waited until Mr. L. W. Clark attended to some business and then went with him to his home for lunch.

I had known Mrs. Clark for several years, as she is always a welcome visitor at the meetings of the Cotton Manufacturers Association of North Carolina.

They have a beautiful home built upon a hill with a fine view and I enjoyed the hour or more spent there.

Returning to the office we went to the finishing plant, which is known as the American Warehouse Company. It is in charge of Will East, formerly president of the Leaksville-Spray Rotary Club, and he showed me the details of finishing and storing.

Most of the blankets come to this plant to be napped and finished and it was interesting to see the large rooms filled with row after row of nappers all in busy operation.

Each blanket has to pass through the machines several times or until the nap is entirely satisfactory.

Across the railroad track is a large bleachery, which bleaches and finishes the bed sheets and pillow cases of the Wearwell Sheeting Mill over at Draper.

Below the blanket finishing plant is one of the finest and most extensive set of warehouses that I have ever seen.

They are built of concrete with labor-saving devices for handling goods to and from the mill and cars.

As stated above, blankets are seasonable goods and have to be carried in large volume until the shipping season and the warehouses are to take care of that situation.

Returning to the office we drove over to Leaksville, which is only separated from Spray by an imaginary line, but is an incorporated town.

C. P. Wall, manager of the two plants at Leaksville, met us and we first went to the Bedspread Mills.

They have about 250 looms which are operated on bedspreads and the entire output is sold by Marshall Field & Co.

A portion of the output is in the shape of crinkled bedspreads with colored stripes, but having about 100 looms with jacquards, which formerly were on damask, they are utilized to make figured bedspreads and to a large extent use rayon or pure silk filling.

The young man in charge of the finishing room was very accommodating and laid out for my inspection thirty or forty different designs and it was an unusually beautiful display. One design using coarse rayon filling so that it gave the effect of lace was especially beautiful.

Leaving the Bedspread Mill we went across the railroad tracks to the Marshall Field Mills Corp.

It is a plant of which every man in the South should feel proud because it has demonstrated that the cotton mill employees of the South are equal to those of any other section.

A few years ago it was claimed that Axminster carpets and rugs could not be woven except by skilled and experienced English weavers.

The Marshall Field interests moved a small Axminster carpet and rug mill from Philadelphia to Leaksville and, using operatives that had never seen a rug or carpet loom, were soon able to turn out a product equal to that of the Philadelphia plant.

Axminster carpets are woven with warps made of heavy ply cotton yarn and a wool filling tied in with jute.

The looms are large and heavy and require large floor space.

The filling is wound on spools about one-third the width of the carpet. Twenty-four yards of each end of filling is wound upon each spool and the colors are arranged on the spools according to the designs.

Two girls tend a winding frame which has a creel of wool spools. Above the frame is a piece of pattern paper and they arrange the spools in the creel according to the pattern. When one spool is made they move the marker on the pattern up one square and change the colors in the creel to match.

It was remarkable to me to see how easily the girls handled the intricate patterns and how fast they made the spools.

The spools when put on the loom looked like an immense pattern chain extending entirely across the loom. There was one set of spools for each pick.

As the spools reach the warp the ends of the filling are pushed down through the warp and a long needle comes from the side of the loom and, passing all the way through, places a jute thread and is then withdrawn, the loom beats up and a knife cuts the filling off all the way across.

When the operation is completed the jute thread extending all the way across is held by the intersection of the warp and the wool filling

(Continued on Page 30)

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CAUSES OF BAD SPINNING

(Continued from Page 21)

studs worn out, improper oiling. Proper fixing has a great deal to do with the work running right.

After you have done these things you will see that the spinning will run much better, and you will then see that it is the little things that give the most trouble.

Greenhorn.

Number Thirty-one

We will consider mills running anywhere, whether new or old. The cardings runs good but the spinning runs bad, although the setting of the rolls in the spinning room is perfect. It may be that the spindles need plumbing. The trouble could be the lack of proper cleaning and oiling, or the travelers may have the wrong circle. I had rather believe that the trouble cames from the card room. While the card room work may run fine, it could produce streaked roving by tight tension on the fly frames. The trouble could also come from frame bands making doublings when creeling. More than likely the bad running spinning is caused by uneven numbers. Still the carding may run all right.

P. M. J.

Number Thirty-two

The title of the contest "Causes of Bad Spinning" consists of just four words, but often require many words as well as knowledge and experience to answer.

A superintendent once offered me a spinning room and requested me to come and look the job over. Among other things he said to me:

"Our spinning is now and has been for more than a year, going very badly. Our carding, as far as we know, is in splendid shape, runs well and gets production."

My observations certainly bore out his statement and it required several months for me to answer his question—"What makes this spinning run so badly and can you get it going good?"

On assuming charge, I found the entire room, machinery and help demoralized. Machines demoralized? Yes. If you are a spinner, when you have the facts, you'll agree with me. There were bobbins and white waste on the floor. The sweeper was doing errands for the help, including the overseer. Spinners were in such haste that they bumped into each other at their work. I observed that most all of the cotton laps on scavenger rolls were small in size. This assured me that the hand was getting around to these broken ends frequently enough to keep ten or twelve sides of fair running spinning. As ends do not break without a cause, we began a campaign to find the causes.

The frames were stopped and all roving and yarn removed before thoroughly cleaning every part from creel boards to sampsons. Then the ring rails were aligned and leveled lengthwise and crosswise, the spindles plumbed top and bottom by an expert; every worn gear renewed and studs made good. Steel roll necks were renewed where necessary and some of them refluted, honed and polished and properly spaced for one inch cotton. The roller bar nebs were made good, top rolls calipered and piaced with laps, faulty ones removed, worn saddles discarded, lever screws adjusted, thread guides adjusted and renewed where worn. In fact, the condition of the frames was raised to concert pitch.

A creel of new roving put in did not show expected results and a scientific test revealed stretched and uneven roving from tight tensions. However, with perfect roving, bad spinning may come from overspeeded frames, spindles or rolls; excessive or insufficient twist or draft; rings too large or small; travelers too light or heavy or that do not fit rings in shape and circle, or badly worn travelers or rings; crooked steel rolls, and this may be in a top roll as well; gauge of frames not adapted to counts being spun; spindles out of plumb, bent worn or bearing point worn; worn bolsters; guide wire worn or not properly set, too near bite of steel rolls.

Other causes of bad spinning are bands too heavy or slack; tapes too tight or too slack; spindle oil too heavy or too light; corroded base chamber or bolsters; roving traverse idle or too much dwell at changing; traverse or lay too fast or slow; worn or crooked skewers; gears meshing too deep or having badly worn teeth; loose studs, bolts or set screws allowing slippage; steel rolls running with a jerky or chattery motion caused by roll stands being out of line or worn or corroded with improper oil or grease and at times in need of oil; humidity not right for cotton and numbers being made; top rolls not proper weighted or poorly covered and allowed to flute and run against laps or lacking oil; flannels not of proper weight material for yarns spun, too large or too small for cotton in use and yarns being produced, not spaced for cotton used; odd sizes used in same frame; worn saddles, levers too high or too low; broken or home made steps in creels; two bottom or two top rovings running into same guide; roving trumpets choking up or loose on rod; stirrups rubbing against steel rolls; lack of proper kind and amount of oil, especially spindle oil.

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If your program and machinery lay-out is for yarns, say 16s to 24s and you try making 30s to 40s without experiment and regulating, then look out for bad spinning for you will have causes a plenty. Or if your equipment is not elastic enough for 40s, suppose you try 6s to 10s and you will have more trouble. A spinning frame, no matter how excellent it's condition may be, cannot improve on well prepared roving, but can play havoc with perfectly carded and prepared roving, if the local spinning conditions of the frames are bad, or not in keeping with the yarn being spun from the proper cotton and staple.

A good organization and work system have much to do with good runnig spinning. It is certainly worth while to keep the room clean and sanitary, top and bottom, every nook and corner. Then see that your spinning is kept clean, oiled and repaired, as well as periodically cleaned thoroughly to the extent of just what the word implies.

An overseer should be the best judge of his own job and not try to pattern after some other room where local conditions are entirely different and sometimes more favorable. He must always strive to improve and eliminate conditions that are not favorable to his department. Present day competition demands that he follow every little detail of making yarns better than the other fellow. To be modern is to have modern conditions, keep everybody on the jump, not excited, but interested in what you are going to accomplish. Poor mills make poor overseers, poor overseers make poor operatives and then the whole things goes to the bad.

You may be spinning warp, filling, hosiery novelties, gray, bleached or colored yarn, medium or fine numbers and in every case there are certain essential conditions to be met if you are to be a successful spinner.

Hard Head.

Number Thirty-three

Some causes of bad running spinning are cut roving, gouts, hard ends, not enough or too much twist in roving, roving stretched too much or uneven roving, singlings on the slubbers, one-third to one-half the sliver down on the card, light weight card sliver with no chance of heavying it up between card and speeder. It weighs several numbers lighter than yarn should weigh and breaks down.

In the spinning room, bad spinning is caused by dirty steel or leather rolls, worn leather rolls, bad rolls on middle or back or putting several cots on the same roll in the roller shop, roller mantles worn on ends and middle; back and front saddles worn. Saddles not properly adjusted, levers set too high or too low, or too little weight rollers, roller bars not properly adjusted. When this is the case, they must be tied down with strings or leather rolls will roll out on the floor.

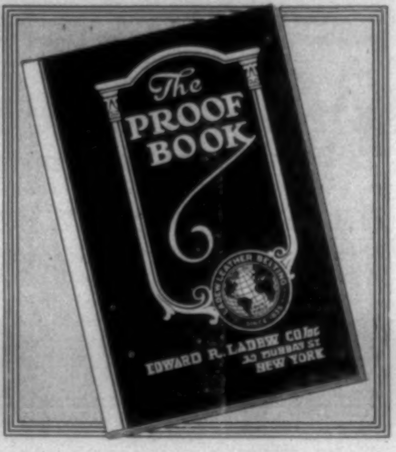
Other causes are improper holes in roving traverse where roving comes through to the rollers, roving traverse stroke too long or short; too much or too little break draft between middle and front steel rolls, worn worm on spiral gear on steel roll that drives roving traverse; blunt or rough roving skewers causing roving to stretch, roving sets cracked or half out, streching roving.

Trouble will also result if guide wires are improperly set; spindles are lined, leveled and plumbed without leveling ring rail both lengthwise and crosswise, spindles out of plumb; spindles and bolsters worn; bases not in good shape, slack or tight bands, or bands that are too large or too small, spindles that are too short to reach the bushings of the bearings in small end of quills or bobbins, bobbins that do not fit the acorn of the spindle properly, bobbins that are not true or out of balance, bushings or bearing in small end of quill or bobbins that does not fit the small or blade end of spindles so that it will run absolutely true, soft rings or rings that are too large for the gauge of frame, the length of traverse and number of yarn being spun; travelers too light or too heavy; guide wires set too far or too close to top of spindles, travelers allowed to run too long; section men using knives, hammers and cold chisels and screw drivers to clean the cotton known as laps off the steel rolls; too much or too little oil on leather rolls and on steel roll stands. Warped scavenger rolls, traverse and bushings worn, separator blades not true, traverse rods worn; bad gears, improper belting; too much or too little twist in yarn, too low or too high speed; humidity too high or too low, improper ventilation and poor cleaning.

Cut roving in the card room is very detrimental to good running work in spinning and one of the hardest things to detect in carding. One drawing frame or one slubber in the card room cutting roving will shut down any spinning room within a short time. Hard ends will cause bad spinning. They crease the leather and ruin rolls and make ends come down. Roving with insufficient twist will cause thin places which will break when traveler hits it. Too much twist in roving has the same effect as hard ends, ruining rolls and breaking ends down. Too much stretch in roving will make it weak. From any frame on the job you will find numbers varying as much as one to five numbers. Everyone knows you can't get the right weight traveler to take care of such a variation. You will find more of this roving than you have any idea when you hunt it. It runs O. K. in the card room, but makes a mess in spinning. Such roving can be made all through the card room, from the pickers to the speeder.

A lap runs out on picker, runs a quarter or half yard before another lap is put on, making a light place that can never be repaired. One-third or one-half yarn of card sliver runs out on floor and makes another light place that can never be repaired, or a drawing frame end runs out unnoticed and you have a good many more yarns of light sliver than cannot be

(Continued on Page 32)



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TEXTILE BULLETIN
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Too Far North

AT the risk of being accused of sectionalism, we are wondering if the Textile Institute movement has not gone too far North.

Judging by the letters and expressions that have come to us it is the general opinion that it would have been better to have given a more general representation to the various phases of the textile industry in the South than to have gone so quickly into New England.

Our problems are, in many instances, divergent from those of New England and while there are in that section many liberal and broad-minded men of the type of Robert Amory and Russel Lowe, the average New England manufacturer has but one idea and that is to place such restriction upon the operation of the Southern mills as to permit New England mills to operate full time.

Some severe criticisms of the work of the Textile Institute Committee are being made and it is undoubtedly true that part of the criticism is justified, but we realize that the South needs a Textile Institute and we believe that mistakes should be overlooked and criticism should be withheld until more definite information is available.

Criticism is New England have been more severe than those in the South and the following statement from New Bedford is typical of the position of many:

> "No special interest is manifested in several of the suggestions concerning attempts to nationalize direction and control of the industry under some central body or supervisor."

A much more unfriendly statement was issued from Fall River and Walter H. Langshaw, president of the Dartmouth Manufacturing Company, has issued a long statement bitterly attacking the entire committee.

The men who originated the idea of the Textile Institute are sincere in their desire to do something that will stabilize conditions in the textile industry of the South and they should have a full measure of support until it is definitely known that nothing worth while can be accomplished.

Too Many Bears

WE wish to caution the textile industry against becoming too bearish on cotton.

When cotton declines the number of bears always increases and if it was selling for five cents per pound there would be those who would be predicting three cents and buyers would be withholding orders for goods and yarns for that reason.

We have no fixed opinion relative to the size of the crop or the price that will prevail because there is, as yet, nothing upon which to base an intelligent opinion.

June is usually the improvement month and usually a bear month, but July, August and September are yet to come and many a crop has been ruined in those months.

We had a long dry season last year over the entire South and it has been too dry so far this season.

Nature usually equalizes weather conditions and it would not be at all surprising to have a long rainy spell in July and August. Cotton manufacturers seem to have entirely forgotten the wet spells of many other years and their disastrous effect upon the cotton yield.

Should such a spell come when nobody has bought cotton, nobody has bought yarns and nobody has bought cotton goods and everybody become scared at the same time we could easily have a run away market.

There is no bull like a scared bear and the stage was never better set for a bull drive, should bad weather come, than at present.

Cotton may go lower but it is now below the cost of production and lower than when we faced a 9,300,000 carry-over in 1922 and at the same time carried immense stocks of cotton goods and yarns that had been accumulated during the boom period.

One very successful Wall Street operator says he made his money buying stocks when he had concluded stocks had not quite reached bottom and selling them when he believed they had not quite reached top.

The only advice we are giving is a word of warning against becoming too bearish.

July, August and September are yet to come and the whole cotton world is in a state of delayed buying.

Yarn Stocks

ON July 1, 1924, reports to the Southern Yarn Association from 810,000 spindles showed 9,349,300 pounds of carded yarn on hand, or 11.53 pounds per spindle.

On July 1, 1925, reports from 473,000 spindles showed 2,408,079 pounds of carded yarn held, or 5 pounds per spindle.

It is a safe estimate that on July 1, 1926, the stocks of carded yarn is not over one pound per spindle, if that large.

Assuming 5,000,000 spindles on carded yarns, hard and soft, and that the stock in the mills that did not report were in proportion to those of the mills that did not report the stock on July 1st of each year were:

July 1, 1924	57,000,000
July 1, 1925	25,400,000
July 1, 1926	5,000,000

These figures are not generally realized but show that the stocks of carded yarns have been liquidated and that with any improvement in business the yarn mills will have a demand in excess of production and will be able to demand a profit.

With 25,000,000 pounds on hand July 1, 1925, the demand that arose in August and September was sufficient to advance prices and the 25,000,000 pounds was absorbed.

Should a demand arise and prices sharply advance three-fourths of the Southern mills will be found sold ahead for six months on a no profit basis. We advise studying the above figures.

A Safe Bet

THE Kiwanis Club of some town has a plan to give a prize to each girl whose skirt hangs not more than 12 inches from the ground.

Judging by our own community it is a safe bet and will require no large expenditure.

Mrs. Highsmith Selected To Make Survey

ANNOUNCEMENT has been made of the selection of Mrs. J. H. Highsmith, of Raleigh, N. C., to make the survey of "Women in Industry" in North Carolina and the appointment seems to have met with general approval.

The industries of North Carolina have nothing to hide, and while conditions are never ideal and those desiring to criticise can always find something that can be criticised, we know that there will be no basis for a sensational report.

Mrs. Hightower should and will receive the co-operation of the textile industry in making her survey.

Our complaint is that the women of North Carolina have not acted in honesty and good faith when they exempted from the survey the largest class of employed women, those in domestic service.

Had the survey included women in domestic service it would have shown that they receive less wages, work longer hours and have more arduous duties than most women in industry, but the women who sought the survey were unwilling that their own treatment of employed women should be exposed.

The former servant of one of the women, who was active in seeking the survey, states that she worked from 7 a. m. to 8 p. m., received $6 per week and was subject to so abuse that she had to quit.

The fact that women were unmindful of the admonition, "Let him who is without sin cast the first stone," is, however, no excuse for the survey not being made and we are glad that it was ordered.

English Yarn Spinners To Fix Prices

IN England it is legal to fix prices and it is remarkbale that some action such as outlined below has not previously been taken:

> London, Eng.—Federation of Master Cotton Spinners is taking a ballot on a scheme to fix a minimum basic selling price on American yarns. If ballot is favorable, Federation will require all firms rigidly to observe the minimum.
>
> Under the scheme prices on American yarn would be reviewed frequently. The Federation says it is "convinced if united support is given short time and basic selling prices, it should prove a stepping stone to improved trade in the American section." Surprise is expressed at Manchester production cost figures upon which scheme is based, and publication of minimum prices is awaited with the greatest interest.

Cotton Exports Increasing

DURING the year the bears have been saying that exports of cotton would be far below last year and would reach 7,000,000 bales.

Exports from August 1 to June 4 amounted to 7,544,076 bales, compared with 7,865,503 bales for the corresponding period in 1925, and recent exports have taken a spurt and are running ahead of those of this period last year.

Personal News

A. F. Ball has been appointed secretary of the Watts Spinning Company, Stony Point, N. C.

L. B. Daniel is now superintendent of the Aubery Spinning Mills, Weldon, N. C.

D. H. McCree has become superintendent of the Wendell Hosiery Mill, Wendell, N. C.

D. R. LaFar has become superin-superintendent of the Harden Manfacturing Company, Worth, N. C.

S. J. Hunter is now superintendent of the Red River Mills, Carhartt, S. C.

P. L. West is now superintendent of the Mill No. 1 of the Carolina Textile Corp., Dillon, S. C.

D. F. Elmore has become superintendent of the Wymojo Yarn Mills, Rock Hill, S. C.

F. H. White has resigned as second hand in spinning at the Limestone Mills, Gaffney, S. C.

T. J. Digby has resigned as superintendent of the Oakland Mills, Newberry, S. C.

Charles Windham has resigned as overseer of carding at the Hanover Thread Mills, Gastonia, N. C.

C. S. Timmeran has become superintendent of the Warrenville plant of the Graniteville Manufacturing Company, Warrenville, S. C.

C. K. Rankin, from Greenville, S. C., has become second hand in spinning at the Limestone Mills, Gaffney, S. C.

S. M. Proctor has been promoted from night to day overseer of weaving at the Phenix Mills, Kings Mountain, N. C.

J. L. Gallman has been promoted from loom fixer to night overseer of weaving at the Phenix Mills, Kings Mountain, N. C.

P. I. Kennedy has been promoted to second hand in carding No. 1 at the Gaffney Manufacturing Company, Gaffney, S. C.

S. B. Schwartz has not resigned as superintendent of the Maginnis Cotton Mills, New Orleans, La., as reported last week through error.

W. G. Carroll, from the Manville-Jenckes Company, Gastonia, N. C., has become overseer of carding at Hanover Thread Mills, of the same place.

F. H. McKay, superintendent of the Belmont Processing Company, Belmont, N. C., was badly injured when an iron bucket dropped by workmen from the top of the building, struck him on the head. He was carried to the Charlotte Sanitarioum and is reported seriously but not fatally injured.

A. S. Paine, who resigned as general superintendent of the Kendail Mills, Camden, S. C., has been appointed manager of the Oakland Cotton Mills, Newberry, S. C.

B. C. Neal has resigned as foreman of the roller shop and belt man at the Avondale Mill, Birmingham, Ala., and accepted a similar position with the Halifax Mills, South Boston. Va.

A. C. Revels has resigned his position with the R. P. Yarn Company, New Haven, Conn., to accept a position with the new spinning plant being built by the Unity Spinning Mills, LaGrange, Ga., the change to take place July 1.

George D. Simpkins, who recently resigned as general overseer of spinning, spooling, warping, twisting and winding at the High Shoals plant of the Manville- Jenckes Company, High Shoals, N. C., has become general overseer at the Atlantic Cotton Mills, Macon, Ga.

Cosgrove Goes With Alemite Lubricating Company.

C. H. Cosgrove who as Southern representative for the Scandanavian Belting Company, is well known to Southern mill men, has accepted a position with the Alemite Lubricating Company, with headquarters at Charlotte, and will be in charge of their industrial trade, devoting most of his time to cotton mills.

B. Frank Mebane.

B. Frank Mebane, of Spray, N. C., died in New York Monday afternoon.

Benjamin Franklin Mebane was born in Mebane, the son of Dr. B. F. Mebane and Fannie Kerr Mebane. At the age of 17 he went to work for himself. His activities in the course of a life time included the foundation of seven cotton mills, a bank, a waterpower and land company. He was the largest land holder in Rockingham county, with more than forty thousand acres along the Dan River between Sray and Cascade, Va. He owned 10,000 acres of rich meadow land in one tract and the Spray Waterpower and Land Co., which he owned, was owner of a large part of the business sections of Spray, Leaksville and Draper, as well as a huge amount of other property. He founded the Imperial Bank and Trust Co., at Spray.

He sold all of his mills except two to Marshall, Field Co., Chicago, which company used the output for sale in its great retail stores.

Early in his career he was the trusted lieutenant of the late Moses Cone, who built the White Oak and Proximity cotton mills, Greensboro and he worked with Mr. Cone in the establishment and development of the plants.

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This Exposition will be the most interesting and attractive that we have yet held. Special railroad rates are being arranged.

All who expect to attend should remember that the Reservation Committee will be pleased to obtain rooms upon request.

MILL NEWS ITEMS OF INTEREST

Shelby, N. C.—The Buffalo Mills, near here are curtailing operations by 50 per cent due to low water.

Harlingen, Texas. — The Valley Cotton Mills have purchased a site for the mill they plan to erect here and construction is expected to be started in July.

Danville, Va—The Dan City Silk Mills will erect a second unit to their plant here. The building contract has been let to W. A. Nance. The building will be 2 stories, 60x150 feet, brick and concrete construction and will cost about $24,000

Lake Charles, La.—The Massasoit Manufacturing Company, of Fall River, Mass., manufacturers of cotton waste products, have completed plans for establishing a plant here for the production of cellulose with rice hulls as the raw material. The "alpha cellulose" to be produced, is the last step in rayon manufacture before the actual spinning of the fibre.

Work on the new plant will be started within a short time.

Mt. Airy, N. C.—Definite plans for the building of a hosiery mill here have been announced and it is expected that the new mill will be in operation in July.

Local men who are interested in the company are W. E. Lindsay, John Banner, J. W. Lovill, A. G. Webb and Lee Hatcher. Mr. Crossingham, of Philadelphia, will be manager. Machinery contracts have been placed.

Kingsport, Tenn. — Work on the new plant of the Holliston Mills, Inc., a New England concern that will make cloth book covers is under way. The plant, a subsidiary of the Kingsport Press, will represent an investment of about $600,000. The buildings are being erected in a site adjacent to the Kingsport Press.

Officials hope to have machinery installed in time to begin operations by October 1.

Newnan, Ga.—Contract for the construction of buildings to cost $195,000 for the new Arnco Mills, was awarded to T. C. Thompson and Brothers, general contractors, of Charlotte. The work will be started at once and is to be completed in six months.

Buildings included in the contract, which was awarded by H. W. Arnall, president of the manufacturing company, are a one-story building, of saw-tooth, daylight construction, 152 by 136 feet; a water house, 40 by 40 feet; three warehouses, each 50 by 100 feet.

Lockwood, Greene & Co., through the office at Atlanta, Ga., is the concern in charge of the engineering work.

Macon, Ga.—G. Glenn Poole is negotiating with Eastern textile men for the establishment of a bleaching and dyeing plant here.

Monticello, Ark.—The addition being erected at the Monticello Cotton Mills will contain 3,000 spindles and 70 looms.

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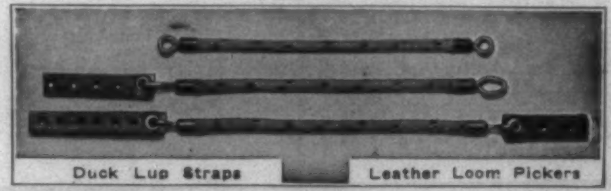

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Biltmore, N. C. — The Sayles Bleachery has let contract to Jefferson and Weedon, Boston, for 27 kier circulating devices. Twelve of the kiers will be installed in the new plant here and the others in the New England plant.

Jefferson & Weedon recently furnished their kiers and circulators to the Belmont Processing Company, Belmont, N. C., and the Savona Manufacturing Company, Charlotte, N. C.

Charlotte, N. C.—Construction of a large addition to the Savona Manufacturing Company has been started and will be completed within three months at a cost of approximately $40,000, according to an announcement Friday by T. C. Thompson and Brothers, contractors.

J. E. Seigel, vice-president, awarded the contract, which includes the building of an addition three stories in height and 60 by 90 feet in ground dimensions, and the construction of a third story on the present plant. The new story will be 75 by 90 feet in dimensions.

Chattanooga, Tenn. — Announcement was made here that the installation of 28 Ludwick type, German-made, 42-gauge, full-fashioned machines is now complete at the plant of the Daveport Mill. T. Walter Fred, president of the company, also said that additional machines of 45-gauge will be purchased and added to the mill to complete the equipment of 100 full-fashioned machines. The plant with the additional machines installed represents an investment of $1,000,000. The building is the last word in modern construction. It is built of concrete, brick veneered.

All facilities for the comfort of the employes have been installed, including well equipped bath, locker and rest rooms. The building was designed by Lockwood, Greene & Co., and was erected by Mark K. Wilson.

The product will be sold under the "Humming Bird" brand. Training of operators is being carried on.

Thomaston, Ga.—Contract for the first unit of the main mill building of the new textile plant to be erected in this city by the Hightower interests was let Friday afternoon by Robert & Co., Atlanta engineers, to the Batson-Cook Company, of West Point, Ga.

This unit of the main mill building will be known as "Martha Mills" after Mrs. R. E. Hightower, Sr., wife of the head of the Hightower mill interests. The unit will be of brick and cement and will have approximately 280,000 square feet of floor space. The building, exclusive of any equipment whatever, will cost $500,000.

More than 30,000 spindles will be housed in the new building and the mill will manufacture automobile cord tire fabric exclusively for the

B. F. Goodrich Rubber Company, of Akron, Ohio.

The letting of the $500,000 contract Friday is but one step in the big development program of the Hightower mills which has been brought about by the contract with the B. F. Goodrich Rubber Company and the arrangement whereby the rubber company enters into a partnership contract with the mills for the erection of the new plant.

The contract calls for the completion of the new unit by the first of next year and the building must be completed by October in order that machinery and other equipment may be promptly installed.

Robert & Co., of Atlanta, the engineers in charge of designs, specifications and contracts, will very shortly let the contracts for the machinery and equipment, for various other mill buildings, and for a modern mill village of several hundred houses, every one of which will be constructed on plans which provide for the latest health, sanitation and recreation features.

Roswell Mill Burned

The Number 1 plant of the Roswell Mills, Roswell, Ga., was entirely destroyed by fire last Saturday afternoon, the blaze being started when a bolt of lightning struck an electric power line and ran into the mill building. The main mill, warehouse and dye plant were burned, the loss being estimated at between $300,000 and $400,000.

The Number 2 Mill of the company, through the efforts of the mill employees, the Atlanta fire department and volunteer workers was saved.

The burned building was a four story brick structure. Within a short time after being struck by lightning, the mill building Number 1, a warehouse and the dye plant were in flames. Before sufficient help could be summoned, the fire had gained such headway that it could not be checked.

The fact that Saturday was a half holiday, the mill closing down at 11 o'clock, probably saved the lives of scores of the 200 workers employed in the mill. Only a few minutes elapsed before the flames swept over the building, and it would have been impossible for everyone to escape had the mill been in operation. As it was, only a few persons were about and no one was inured.

The flames ate their way into the heart of the building, destroying practically all of the 7,000 spindles. Other valuable machinery was melted into a twisted mass. The blaze then spread to the nearby dye house, which was destroyed, and took in the warehouse, where 500 bales of cotton were stored. Little was saved in either of these buildings. At this stage, however, the Atlanta fire truck joined in the battle and the blaze was prevented from spreading to Mill No. 2, the newer unit a few hundred feet away.

The original plant of the Roswell Mills was built in 1840 and was one of the limited number of Southern mill that became well established before the Civil War. The building was burned by Sherman's army in 1865, but was rebuilt in 1867 and has been in operation since that time. During the reconstruction period the products of the mill were so well known that they were used as currency by the people in the Roswell section.

Until June 1923, the mills were operated under the original charter as the Roswell Manuacturing Company, but in July of that year they were purchased by William G. Broadfoot, who reorganized the company as the Roswell Mills, Inc. B. E. Geer, of Greenville, is president of the company and Mr. Broadfoot is manager.

Textile Graduates At State College

Raleigh, N. C.—Twenty-nine young men completed full four years courses at the above textile school and the degree of B. S. in textiles was conferred upon them. Of these, five were in textie chemistry and dyeing, and twenty-four in textile manufacturing.

George William Dobbins, Rutherfordton, N. C., was awarded the Student's Medal given by the National Association of Cotton Manufacturers to the student having the highest proficiency in his work for the four years. State Senator, Mark Squires, made the presentation, outlining the purposes for which the medal was awarded and stating that this was the eighteenth year it had been awarded to the textile school. It is one of the highest honors that can be conferred upon a graduate of a textile school.

The textile school offers three courses: Textile Manufacturing, Textile Chemistry and Dyeing and Textile Design all of which cover a period of four years and lead to the degree of B. S. in Textiles.

A selected two year course is offered to graduates of Universities and Colleges. This course is arranged to meet the individual demands of the student and consists principally of textile subjects.

Following is a list of graduates:

In textile chemistry and dyeing:

John Franklin Byrd, Fred Stanton Pritchard, Henry Laton Harris, Carle Woodruff Mason, Richard Halbert Webb.

In textile manufacturing:

Donald Milton Bailey, Thomas Walter Talliaferro Brown, Yan Chin Ching, Thomas William Church, Jr., John Murdock Currie, Charles Algernon Davis, George William Dobbins, Joseph Clarence Farmer, William Whitley Gluyas, Nelson Norfleet Harte, James Lewis Hauser, William Lilly Horne, Joseph Paisley Hughes, Edward Clifton Mitchiner, Marion Farr Palmer, Peter Warlick Patton, Henry Edward Rufty, Jr., Harry Hutcheon Redwine, Perry Manning Riff, Arthur Haskell Thomas, Edwin DeBerry Robinson, Parker Walton, Floyd Webster Warrington, Thomas Cashion White, Jr.

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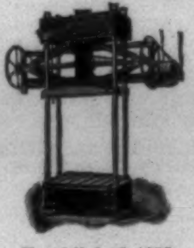

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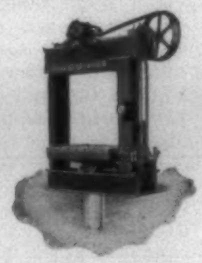

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Visiting Spray, Leaksville and Draper

(Continued from Page 23)

in colors to make the design go down under the jute thread and come up again, thus causing two ends of each thread to stick up.

The wool filling threads have a total length of about one inch, that is, they stick up about one half inch on each side of the jute tie thread.

The carpets and rugs after being woven go to shearing machines, which shear the wool threads down to the desired thickness of the carpet.

The shearing is a very important phase of Axminster carpet manufacturing and Superintendent Clark, who came from Philadelphia to manage this plant, is regarded as one of the most expert carpet finishers in the United States.

Our description of the Axminster carpet and rug mill of the Marshall Field Corporation is crude because it was the first time we had ever seen a plant of that kind, but we feel that the entire South should be proud of that plant and of the manner in which it has been established and brought to its present state of efficiency.

After my return to Charlotte they sent me three beautiful oval shape Axminster rugs and they have been greatly admired by my friends.

Leaving the carpet mill about 4 p. m., L. W. Clark drove me over Spray and Leaksville and the surrounding country. While in Leaksville I met the editor of The Arrow, the very live mill paper published for the employees of the Carolina Cotton and Woolen Mills, and later I met the young lady that is the very efficient associate editor.

E. D. Pitcher, treasurer of the Carolina Cotton and Woolen Mills, very kindly invited me to take dinner with him and about six o'clock I went to his home, which is located near that of L. W. Clark.

He expressed his regret that Mrs. Pitcher was out of town but I enjoyed my visit with him.

Mr. Pitcher came to Spray as representative of Marshall Field & Co. before they purchased the mills at Spray, Draper and Leaksville, but were buying large quantities of goods from them.

I was pleased to learn that he was a friend of Charlie Barker, the Charlotte representative of Marshall Field & Co., and that years ago they had worked together in the Chicago office.

Mr. Pitcher is a man of very pleasing personality and handles his very large position with remarkable ease.

At 7 o'clock I went with E. D. Pitcher and L. W. Clark to the Community Building, where I addressed the Carolina Co-operative Council, composed of the superintendents, overseers and second hands of their mills. There were about one hundred present and I found among them a number of old friends and quite a few that I had known by name but had never met.

The Carolina Co-operative Council is a very live organization and is doing splendid work.

After the meeting L. W. Clark sent me to Reidsville in his car. I spent the night there and came to Charlotte on the morning train.

I came back with a far different idea of the work of the Carolina Cotton and Woolen Mills.

Located in the hills of the northern part of North Carolina and in southern Virginia at Fieldale and Roanoke are plants that are producing and shipping goods every day to the great stores of Marshall Field & Co. in Chicago.

Cotton blankets, wool blankets, bed sheets, pillow cases, gingham, colored goods, cotton bedspreads, silk and rayon bedspreads, Axminster carpets and rugs, towels, knit underwear and many other products are being made and with the exception of a portion of the blankets, all of them go to Chicago, where they are sold either through the wholesale or the retail store of Marshall Field & Co.

In charge of their manufacturing plants they have placed men of ability and vision who are striving always to be the leaders in improved manufacturing processes.

The trip to Spray, Draper and Leaksville was a revelation to me.

I regret that through the loss of my notes, I have had to omit some interesting items and the names of some of the men I met. All of this is written from memory.

Cotton Consumption in May

Washington, June 14.—Cotton consumed during May totalled 516,758 bales of lint and 59,754 of linters, compared with 575,799 of lint and 61,952 of linters in April this year and 531,668 of lint and 61,272 during May last year, the Census Bureau today announced.

Cotton on hand May 31 was held as follows:

In consuming establishments 1,449,932 bales of lint and 165,019 of linters compared with 1,639,174 of lint and 180,192 of linters on April 30th this year and 1,343,019 of lint and 154,494 of linters on May 31 last year. In public storage and at compresses 2,964,824 bales of lint and 83,423 of linters compared with 3,530,811 of lint and 84,264 of linters on April 30 this year and 1,139,652 of lint and 45,531 of linters on May 31 last year.

Imports Decrease.

Imports during May totalled 13,626 bales compared with 33,464 in April this year and 14,219 in May last year.

Cotton spindles active during May numbered 32,267,010 compared with 32,893,042 during April this year and 33,136,926 during May last year.

Statistics for cotton growing States:

Cotton consumed during May 363,475 bales compared with 404,014 in April this year and 359,010 in May last year. Cotton on hand May 31 was held as follows:

Cotton on Hand.

In consuming establishments 863,784 bales compared with 989,906 on April 30 this year and 733,724 on May 31 last year.

In public storage and at compresses 2,724,835 bales compared with 3,305,417, on April 30 this year and 869,000 on May 31 last year.

Cotton spindles active during May numbered 17,048,474 compared with 17,251,220 during April this year and 16,864,058 during May last year.

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Program for North Carolna Association

The program for the annual meeting of the Cotton Manufactdrers' Association of North Carolina, to be held in Asheville June 24, 25 and 26, is as follows:

Thursday Evening. June 24, 7:30 P. M.

Meeting of Executive Committee, Officers and Chairmen of the several committees — Private Dining Room, Grove Park Inn.

Friday, June 25, 10 A. M.

Open Session — Assembly Room, Grove Park Inn—J. M. Gamewell, Acting President, Presiding.

Prayer—Dr. G. Floyd Rogers.

Appointment of Committee on Resolutions—T. N. Webb, Chairman, Hillsboro, N. C.; B. B. Gossett, Charlotte, N. C.; A. H. Bahnson, Winston-Salem, N. C.

Appointment of Committee on Nominations—C. D. Welch, Chairman, Cramerton, N. C.; J. Walter Williamson, Wilmington, N. C.; C. E. Hutchison, Mount Holly, N. C.

Address—Hon. Thomas Dixon, Author and Playwright.

Friday Afternoon.

Golf Tournament in charge of W. H. Willard, Charlotte, N. C.

Friday Evening, 8:00 P. M.

Banquet—Members, Guests and Families.

Toastmaster — J. M. Gamewell, Acting President.

Music by Quartette.

Introduction of Special Guests.

Address—Judge Francis D. Winston, Windsor, N. C.

Presentation of Golf Prizes.

Saturday, June 26, 9:30 A. M.

Executive Business Session.

A Memorial by David Clark.

Report of Secretary and Treasurer.

Report of Traffic Department.

Report of Standing Committees.

Report of Committee on Resolutions.

New Business—Report of Committee on Textile Institute.

Unfinished Business.

Report of Nominating Committee and Election of Officers.

Adjournment.

Program for Ladies.

Friday Morning, June 25, 10:30 A. M.—Putting Contest.

Friday Evening, 8 P. M.—Annual Convention Banquet, Grove Park Inn.

Saturday Morning, June 26, 11 A. M.—Bridge Party, Ladies' Parlor.

$500,000 Estate Left By S. F. Patterson

Samuel F. Patterson, who at the time of his death was president of the American Cotton Manufacturers' Association, left an estate valued at $500,000, according to an estimate by the will's executors. The will was probated in Roanoke Rapids.

Francis S. Patterson and Mrs. Mildred Beard, son and daughter of Mr. Patterson by his first wife, are bequeathed 250 shares of Rosemary Mill common stock. The remainder of the estate, which Mr. Patterson desired to remain invested in the mills at Roanoke Rapids, is to be shared equally by the widow and daughter. Stock of the par value of $50,000 is given outright to Francis F. Patterson, and there is a provision that Roanoke Mills stock may be exchanged for Rosemary Mills stock. The deceased was president of both mills.

Mrs. Beard is to receive the income from her stock, which remains under control of the executors, who may sell it and reinvest the proceeds. At her death, the will directs, the income is to be paid to her heirs until they are 21 years old, when it will become part of the residuary estate.

To Mrs. Nancy F. Patterson, the widow, and daughter, Mary Patterson, is bequeathed all income from the remainder of the property. At the death of either the survivor is to receive all. In the event of Mrs. Patterson's remarriage, she wlil be limited to $6,000 a year. At the death of Mary Patterson her income will go to her heirs, if any, for a period of 20 years, when the principal will be divided among them. Should both wife and daughter die without having heirs the income from the estate is to be used for educational and charitable purposes.

Mrs. Nancy Patterson, Francis F. Patterson and Rufus L. Patterson, of New York, the latter a brother of the deceased, are made joint executors. By the terms of the will they were required to immediately name a fourth person to succeed any one of the three executors who might die, and John L. Patterson ,of Richmond, Va., another brother, was named. The will was dated July 13 1923.

Large Fence Contract.

The General Equipment Company, Charlotte, has been awarded a contract for approximtely 9,000 of Page protection fence by the Sayles-Biltmore Bleacheries, now under construction at Biltmore, N. C. About 5,000 feet of the fence, which is to be 8 feet high, will be required for the plant in Biltmore and 4,000 for the plant in Saysville, R. I. The new "Cornicola" post base, invented by C. W. Allison, manager of the General Equipment Company, will be used on both jobs.

The General Equipment Company recently established an engineering department, with V. O. French, a graduate of Iowa State College, in charge.

Fuller Callaway and Lord Kitchener

An interesting article is noted in the June edition of Nation's Business in which the author states that in 1913 Fuller Callaway was talking to Lord Kitchener in Egypt. Lord Kitchener was complaining of the ravages of the pink bollworm, when Mr. Callaway suggested that they breed a quick-maturing cotton instead of the 188-day maturing cotton which they then were raising. Mr. Callaway had some of his seed from Georgia sent over to Egypt; seed which would mature quickly. The next season Lord Kitchener cabled him that they were then picking cotton 86 days after the Georgia seed was planted. Thus, the introduction of the early maturing seed saved the Egyptians from the pest of the pink boll weevil and millions of dollars.

When the war broke out, Lord Kitchener told Mr. Callaway that it would last years, instead of months, and told him to go back home and build cotton mills, as he would be able to sell all his output for the four or five years. He did this and built many mills in the La Grange, Ga., district and made a great fortune by doing so. — Daily News Record.

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CAUSES OF BAD SPINNING

(Continued from Page 25)

repaired. If slubber trumpets get choked, the roving squeezes through and is drawn down to about half regular size, making several hundred yards of light roving. On the speeder you will get some of this light roving and some good roving together and it goes through O. K. The carder says his work in running fine, but look out for the spinning. This is one of the worst things the spinner has to contend with, because it is hard to convince the average mill man that such a condition exists. You can't regulate your travelers to such a variation on the same frame.

Dirty steel and leather rolls make bad work. Have a good system for cleaning to insure good running work. As a rule, dirty work does not run bad in spinning so long as it is not choked by cotton in the rolls. Steel rolls should be cleaned once a year, all necks tightened and burrs removed. Poor leather rolls should not be used in a spinning frame in front, middle or back, whether frame is old or new. Run a roll until it is no good, then take it to roller shop, wash cotton and cloth both off. Clean metal well and cover with new cloth and new cot. Keep good smooth mantles, at both ends and middle. Remove all worn saddles, see that stirrups hang in proper place on saddles. Keep levers as near level as possible. It is possible to keep them level.

Keep trumpets in roving traverse smooth and open. Too short traverse on roving traverse will crease rolls and ruin them and cause ends to be larger than the middles and ends will come down when they get to the low places. If traverse is too long, roving will run out at end of roll, breaking the end and wasting roving. Too much break draft between middle and front steel roll weakens roving, causing it to break and go around steel roll.

Guide wires should be plumbed with spindle. Frame should be lined, leveled and plumbed once a year. Ring rails should be leveled lengthwise and cross before plumbing spindles, and as little paper used as possible and only on one side of base. Worn whorls on spindles will make a different speed and different twist on the same frame, which will of course make bad spinning. If points of spindles are worn, they will wobble and make bad work. Slack bands make soft yarn and bad running work. Tight bands pull spindles out of plumb and make them run bad. Too large a band will decrease spindle speed and take out twist.

One of the great curses in spinning is poor rings, rings that are too large or too small for numbers and traverse and gauge of frame. Too long a traverse and too much speed on front rolls make bad spinning. Have only one buckle on belt and not have belt too heavy.

If rods or bushings are worn, rail will be thrown out of true, causing spindles to be out of plumb and making bad work. Mixed gears on spinning frames will cause bad spinning.

I believe more spinning rooms run bad today on account of humidity conditions than any other one thing in the spinning room. Mostly the trouble is on account of not being able to get the proper amount of humidity. Some mills have all they need but do not use it scientifically. They pay no attention to their hygrometers and the condition of their rooms. Humidity is the salvation of any spinning room and especially on fine numbers.

Now what would I do if I should take a room with part or all of these troubles. First I would clean up myself as nicely as possible, shave, comb my hair, put on a nice clean shirt, and trousers, shine my shoes, get me a nice cap, get a great big smile on my face, go through my room and speak to every one I met no matter how dirty, ugly or pretty they might be, and I would keep this up. I would first find something that I knew would make the work run better so as to gain the confidence of all my help and make them know I had come to help them and not make it hard on them. After I had gained their confidence I could make any kind of a change I wanted and they would back me up. But I would first take the temperature of my room, the wet and the dry, and I would follow this up until I found out at what degree of heat and humidity my ends ran best then I would keep it there as close as it was possible. After gaining the confidence of my help I would begin to organize an oiling and cleaning system and I would make no move that did not make the work run better. Good running work will cover a multitude of sins.

Then I would teach my section and second hands not to take knives, hammers, cold chisels and screw drivers to get laps off the steel rollers thereby ruining the roller and making it hard on the spinners. I would also teach them to follow the doffers every doff and see that no ends were left down to tear the spinners up. I would also see that they fixed an end when spinner reported it to them at once. Because a few ends that will not stay up will get any good spinner in the hole in a short time. I would see that when it was necessary for them to speak to a spinner or any hand working for them that they spoke to them like a gentleman should speak to any one. Cursing around the help I would not stand for.
as well.

Quartette.

Number Thirty-four

This is a very large subject to cover as so many things can cause bad running spinning. These are some of the causes I have observed during my experience in the spinning room.

Cotton not being properly graded and mixed; process of carding is not kept clean; improperly oiled; improper setting of cards and rollers on fly frames, and not having the right amount of humdity. All this will cause lumps, oily spots, thick and thin places, and heavy and light places in the roving, and when it gets to the spinning frame it will show up, and cause bad running spinning.

If the spinning frames are out of line, and not level, thread guides and spindles out-set, too heavy or too light and worn travelers, old leather rollers and necks of steel rollers loose, slack bands or tapes, high speed, too much or not enough twist, too long or too short a draft, frames not properly oiled, too hot or too cold, and not proper amount of humidity, and sides not clean,—all this will cause bad spinning.

Young Spinner.

Practical Discussions

(Continued from Page 20)

ners use 8 bobbins and divide into 8000 for yarn number. In all of these divisions there is sure to be fractions or decimated answers. So that while we have started with the constant numbers 840, and use 1000 to 7000 grains—according to the number of bobbins reeled, and secure decimated answers to our problems. We would have had decimated answers just the same had we started with 1000 yards for our constant number. Also, it does not follow that we would had even numbers nor intergers for answers, had we started with a decimated constant number. This is amply proven by the use of the decimated constant numbers of the famous metric system which is sometimes advocated. Trusting all of this may prove interesting to Mr. 840 also to other textile students, this answer is offered. Might also add that 840 is easy to remember as peculiarly a textile term. While 1000 a constant number might belong to too many other things in mathematics. If 840 is divided into 7000, the quotient is 8 1-3. If one or more yards of any cloth yarn is measured off, and weighed; in order to ascertain the actual yarn number it is only necessary to multiply the total yards weighed by 8 1-3, and divide the product by the weight in grains. Another interesting matter in connection with the constant number 840, is that as this represents the total yards of yarn in one pound, it also follows that number 2 yarn has twice 840, number 10 yarn has ten times as much (840×10=) or 8400 yards of yarn in a pound, etc. It must also be remembered that 840 does not represent the total yards of yarn which can be spun from one pound of cotton for number one yarn. This will depend upon the character of the cotton. System.

Mrs. J. H. Highsmith Is To Direct Women in Industry Survey

Raleigh, N. C.—According to announcement made by Mrs. Kate Burr Johnson, chairman of the State Child Welfare Commission, Mrs. J. Henry Highsmith of Raleigh, has accepted the appointment as director of the survey of women in industry, which is to be made by the State Child Welfare Commission, by the order of the Governor, in compliance with the request of the women's organization of North Carolina.

Mrs. Highsmith will take up her work immediately. Her headquarters will be in the offices of the staff of the State Child Welfare Commission of which E. F. Carter is executive secretary. The offices are located in the old Blind School building.

She will have the assistance of Mr. Carter and of the facilities of his office in making the survey. It will also be necessary to supplement the organization by several workers. Mrs. Highsmith and Mr. Carter will immediately begin the work of completing the organization.

The present plan is to study about ten per cent of the women in industry, by taking typical communities and selecting certain industries, in order that reasonably accurate conclusions as to general conditions may be made. The commission itself has done a good deal of preliminary work, which will help Mrs. Highsmith in beginning the work. The work on the survey will start immediately, although it will be several weeks before the schedules, blanks and other details can be arranged. The governor has assured the commission that the necessary funds for making the survey will be provided.

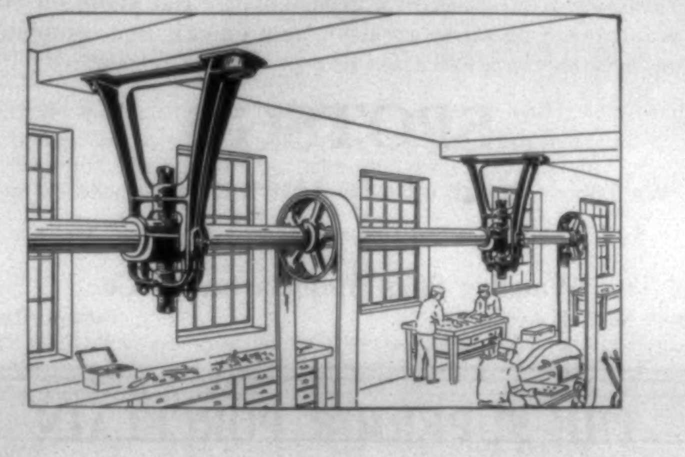
A number of prominent women in the State have expressed to the commission their pleasure at Mrs. Highsmith's appointment.

Mrs. Highsimth left her work with the State Board of Health as publicity director, to become, in 1918, director of the war savings campaign in the State, under F. H. Fries of Winston-Salem. She was next appointed by the federal treasury to organize the fifth reserve district for the thrift campaign. She was secured as director of publicity for the Amreican social hygiene association in New York, and she has recently served as chairman of press committee for the Federation of Women's Clubs in the State.

Spinners Curtail 40-50 Per Cent

Incomplete reports from a questionnaire sent all mills in the Southern Yarn Spinners' Association show that spinners report curtailment ranging from 17 to 75 per cent, with an average curtailment among mills which made the report of 45 to 50 per cent. The mills making the report represent 750,000 spindles.

Secretary Greene, of the association, states that in addition to the mills which reported short time operations now, many other spinners reported that they are operating only on orders and that such mills are invariably reducing their output except where they can book business showing a profit. An even greater curtailment is expected before the first of July, as many mills has signified their intention of curtailing within the next two weeks. Mills which have orders on hand are operating only enough to fill them and assert that they will begin curtailment as soon as present orders are completed unless new business can be secured at profitable prices.



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Cotton Mill Processes and Calculations

(Continued from Page 18)

and in exactly what way all the drafts are to be distributed, from the first lap to the finished goods.

The general plan of the work is somewhat empirical, that is, not founded on any exact rules but following rather the lead of experience.

Range of Drafts.

393. The ordinary range of drafts for each machine in the mill, has already been discussed in connection with other features. It is not necessary here to enter into the reasons for these ranges. It will be assumed that under ordinary conditions existing in Southern mills, the range of drafts now in use is right. They are about as follows:

Machine.	Doublings.	Draft.
Lappers (3 processes)	4	2 to 6
Cards	1	75 to 125
Drawing (3 processes)	6	4 to 7
Slubbing	1	3½ to 5
Intermediate	2	3½ to 5
Fine Roving	2	4 to 7
Spinning	2	6 to 15
Spinning	1	6 to 10

The whole draft in a mill from breaker lap to spun yarn would be according to above table—minimum:

2 x 2 x 2 x 75 x 4 x 4 x 4 x 3½ x 3½ x 4 x 6=11,289,600; and maximum:

6 x 6 x 6 x 125 x 7 x 7 x 7 x 5 x 5 x 7 x 15=24,310,125,000.

But as there are doublings in most of the processes the effective draft in the whole mill would be the draft as above divided by the product of all the doublings. In the minimum, the doublings are:

4 x 4 x 4 x 6 x 6 x 6 1 x 2 x 2 x 1=55,296.

The minimum effective draft then is: 11,289,600÷55,296=204. In the maximum, the doublings are the same as above except in the case of spinning, in which there are 2 doublings, so that the total doublings are 2 x 55,296=110,592. Hence the total maximum effective draft is 24,310,125,000÷110,592=219,822.

394. Theoretically, therefore, the total range of drafts in a mill, according to established custom is from 204 to 219,822. On account of contraction from twist in various processes, this would be in practice about 170 to 170,000.

The weight per yard of laps to start with may range from 8 ounces to 20 ounces. The total maximum draft throughout the mill would reduce an 8 ounces lap to yarn weighing $\frac{8}{170000}$ ounces per yard. This weight would correspond to number 400 yarn.

The total minimum draft would reduce a 20 ounce lap to yarn weighing $\frac{20}{170}$ ounces per yard. The weight would correspond to number .16 yarn.

395. The above figures are not given as in any sense a guide to the actual organization of any mill, but merely to show the wide range of possibilities of the work. In ordinary Southern work the range of practical requirements is for yarn between number 2 and number 60, so that it does not become necessary to approach either of the extremes of lap weight, or either of the extremes of drafts.

396. On numbers of yarn below 14, it is usual to omit the intermediate roving.

On numbers above 40 it is advisable to add another process of roving, called "jack roving."

Considerable variation in yarn numbers may be made by running the same roving single or double in the spinning frame.

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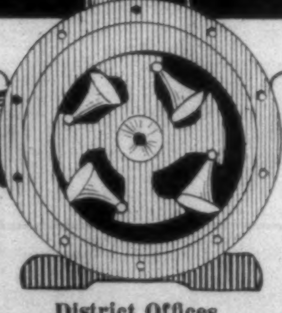

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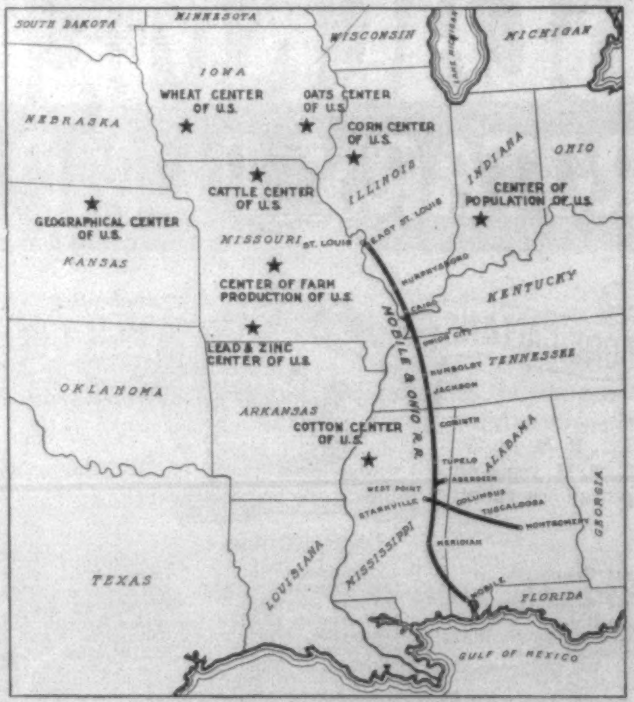

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It is always best for the yarn, to use double roving; but for the sake of cheapness in first cost of machinery, and also in cost of manipulation, single roving is often used for common work. To illustrate the way in which this cheapness is brought about, suppose it is desired to spin number 24 on spinning frames with a maximum draft of 8 for single roving or 12 for double roving (which is an ordinary condition.) With double roving it would be necessary to make(24 x 2÷12=)4 hank roving, while with single roving it would be necessary to make only (24 x 1÷8=)3 hank roving. It requires fewer roving spindles to produce a given amount of 3 hank roving than 4 hank. Thus there is a saving both in first cost of roving machinery and in the cost of operating it. But it must be remembered that the saving is at the expense of quality of goods produced.

397. To give greater flexibility to an organization and to prevent the necessity for making too many sizes of roving in a mill, single roving is sometimes allowed. This is especially the case in mills that weave their own yarns.

As will be shown later, the filling is generally spun 3 to 10 numbers finer than warp. When a mill is regularly running on one kind of cloth, in most cases it makes the same hank roving for the filling as it does for warp; but the roving is put up single in the spinning frames for making filling, and put up double in the frames for making warp.

This method is not recommended for fine cloth, containing yarns above No. 30. The requirements for evenness in this kind of cloth are greater than for coarser cloths, and hence the double roving is recommended for both warp and filling.

Two Ply Yarn.

399. Having shown how to arrange drafts, etc., to produce any required yarn, it remains to show what yarn number is required for certain goods to be put on the market. If a certain 2 ply yarn is wanted, the proper single yarn must be decided upon to make it. Suppose it be required to make 2 ply 30s. The weight of this must be twice as much per yard as single 30s. If there were no contraction or extension of the yarn in the twisting process, it would simply be necessary to spin single 30s. But in twisting, there occurs sometimes a contraction in length, and sometimes an extension. In the case of number 30, there is a contraction of about 1 per cent so that it is necessary to spin about number 30.3 single to twist into 2 ply 30s.

400. The operation of twisting has a tendency to make the yarn shorter, as was shown in the discussion of spinning. But as the twister turns the yarn in the opposite direction from the first twist put in the single yarn on spinning frame, there is also a tendency in the twister to untwist the single yarn and thus lengthen it. With coarse yarns, up to about number 24, this lengthening by taking out twist in the single yarns is greater than the shortening made by putting in new 2 ply twist and there is "extension." At about number 24, the two tendencies are equal, and for finer yarns the lengthening, and there is "contraction." It is difficulty to exactly define the amount of various degrees of twist per inch in various yarns. In practice, it is generally determined by trying a few bobbins in each case.

401. As a general guide, to show about what the average allowance should be the following figures are submitted for contraction and extension.

Numbers 1 to 8	3 per cent. extension.
Numbers 8 to 16	2 per cent. extension.
Numbers 16 to 24	1 per cent. extension.
Numbers 24	No extension; no contraction.

Numbers 24 to 30	1 per cent. contraction.
Numbers 30 to 40	2 per cent. contraction.
Numbers 40 to 50	3 per cent. contraction.

This means that for making yarns for 2 ply less than 24, the single yarn must be spun coarser than the designated 2 ply number number 24 must be spun about 24; numbers higher than 24 must be spun finer than the designated numbers.

Cloth.

402. If it is required to produce cloth of a certain construction and weight, calculations must be made, to show the proper number of yarn to spin for warp and for filling, to produce this cloth.

By "construction" of cloth is meant the number of warp threads per inch, (sometimes called the "sley" of the cloth, and sometimes expressed as so many ends per inch,) and the number of filling threads per inch, generally called the "picks per inch." The warp is expressed first: thus a cloth 46 x 48 means 46 warp ends, and 48 filling picks per inch.

The weight of cloth is generally expressed as so many yards per pound. In heavy goods, like ducks and denims, the weight is expressed as so many ounces per yard.

403. Assuming cloth 46 x 48, 39 inches wide, 3 yards per pound, what numbers of warp and of filling are required?

The calculation involves finding the number of yards of yarn in one yard of cloth, and finally in one pound. The number of yards of yarn in a pound being divided by 840, (the number yards of yarn in a hank) will give the hanks per pound or "number" of yarn, if both warp and filling are to be the same. If there is to be a difference, the above calculation gives the "average number."

404. Disregarding, for the moment, the weight due to sizing and the shortening of yarn due to the filling being bent partly around the warp, and the warp being bent partly around the filling, ("contraction") the yards of yarn in a pound of the above cloth would be found as follows: As there are to be 46 warp threads per inch, there would be (46 x 39=) 1794 in the width of the cloth. In addition to this there are some extra threads (from 6 to 8) put in each edge for selvage. If there are to be 12 extra threads in all, there will be (1794+12=) 1806 threads. In a yard in length of cloth, there will be 1806 yards of warp. As there are to be 48 filling threads per inch, in one yard in length of the cloth there will be (36 x 48=) 1728 filling threads 39 inches long.

This makes (1728 x 39÷36=) 1872 yards. In one yard in length of this cloth there will be 1806 yards of warp and 1872 yards of filling, or 3678 yards of yard in all. In one pound there will be (3678 x 3=) 11034 yards or (11034÷840=) 13.1 hanks. Hence, not allowing for contraction or sizing the average number required is 13.1. Expressed as a formula the yards of yarn in one yard of cloth would be:

$$46 \times 39 + 12 + \frac{48 \times 36 \times 39}{36}$$

This is the same as (46+48) 39+12, and works out 3678 as before.

405. Hence, TO FIND THE THEORETICAL AVERAGE NUMBER TO SPIN FOR ANY GIVEN CLOTH, WE HAVE THE RULE:

ADD THE NUMBER OF WARP ENDS PER INCH TO THE NUMBER OF PICKS PER INCH. MULTIPLY BY THE WIDTH OF CLOTH. ADD THE NUMBER OF THREADS FOR SELVAGE. MULTIPLY BY THE NUMBER OF YARDS OF CLOTH PER POUND. DIVIDE BY 840.

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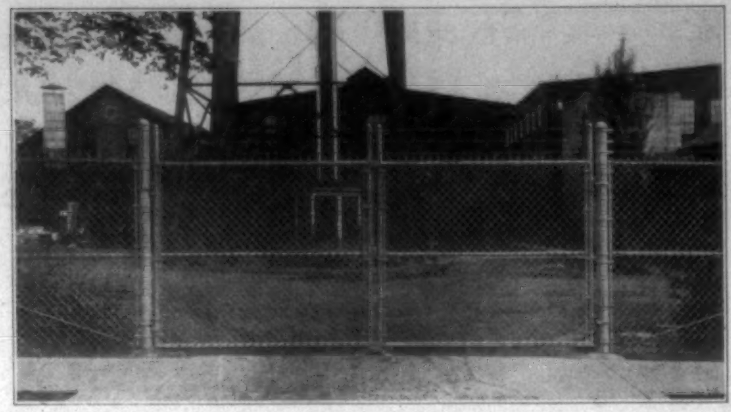

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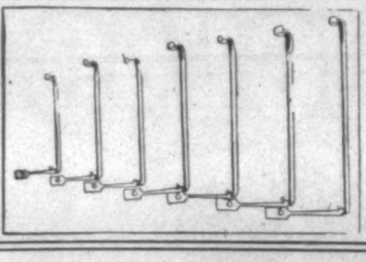

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But, on account of sizing and contraction, the actual average number to spin is somewhat higher than that given by the rule. The amount of allowance varies according to the amount of sizing put on the warp, and upon the construction of the cloth and upon the tightness with which the cloth is held in the loom while being woven.

406. In calculating yarn number for any given cloth, the particular circumstances must be considered which govern that particular case. Under ordinary circumstances, such cloth as above calculated would contain about 5 per cent. of starch and would contract in weaving about 5 per cent., so that altogether the yarn should be about 10 per cent. lighter than would be shown by the rule. Thus instead of the average number being 13.1, it would be about 14.4. If filling is to be lighter than warp, say 2 numbers, then for the above cloth, we might spin number 13½ warp and 15½ filling.

In this example, there was 11034 yards of yarn per pound of cloth, which amount we divided by 840 (yards in 1 hank) to arrive at the theoretical number. We then added 10 per cent. to this number. Approximately the same result may be obtained by deducting the 10 per cent. from 840, dividing the yards of yarn by 756. This would give 14.6 as the average number.

407. Theoretically the above way of averaging numbers and dealing with per cents is not strictly correct, but there are so many other points involved in the problem, all of which are subject to variation, that it is useless in practice to strive for too great refinement of theory.

408. A weaver may make several points difference in the weight of two pieces of cloth woven from the same warp and filling. This may be done by weaving with varying tension in the warp.

409. Manufacturers learn by experience what average allowance should be made for contraction in the various lines of goods they make. This allowance is fixed upon, and the weavers are made to work in such a way that the final weights and widths stay right. In the South, the allowance is mostly made by adding something to the theoretical number of the yarn. In England, and to some extent in New England, the allowance is made in dividing the number of yards of yarn in a pound of cloth by some arbitrary number (derived from experience) less than 840. This gives the average actual yarn number at once.

Equipment.

410. Having decided upon the kind of goods to make, and decided upon the organization, it remains to find the proper arrangement of machinery to produce the desired result.

411. The unit of capacity for a cotton mill is the spindle. In the South, a mill is frequently alluded to as being a 5,000 or a 10,000 spindle mill, irrespective of whether it also contains looms or not.

In working out the equipment for a mill, it is usual to begin with the given number of spindles and keeping the organization sheet in mind at all points, (1) compute from production tables the number of pounds of yarn that these spindles will deliver. (2) Find the number of fine roving spindles necessary to produce say 2 per cent. more in weight than the yarn; (3) the number of intermediate spindles for say 4 per cent. more than yarn; (4) the number of slubber spindles for 10 per cent. more than yarn; (5) the number of drawing deliveries for 10 per cent. more; (6) the cards for 15 per cent. more; and (7) the pickers for 20 to 25 per cent. more. These allowances are for waste and various accidents liable to occur to the prepara-

(Continued on Page 42)

The Story of Cotton

(Continued from Page 8)

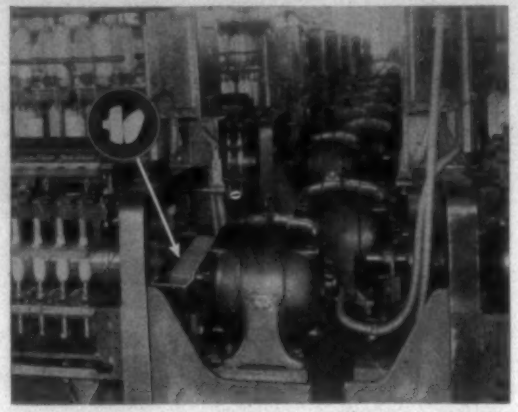
And here lies the wonder, that though there be only one dye in the vat, yet different colours appear on the cloth; nor can the colours be again removed." It is strange , that while calico printing was pursued so successfully on the other side of the Mediterranean Sea, the art did not find its way into Europe for more than sixteen centuries.

We first read of calico-printing in Lancashire, A.D. 1763. It was then carried on, though in a rude homely manner, at Bamberbridge, by a family of the name of Clayton. At that time there resided at Peelfold, near Blackburn, in humble circumstances, a man named Robert Peel. He was the owner of forty acres of poor grass land, and of three looms, worked by his three sons when not employed out of doors. One of the sons chanced to spoil, in the weaving, a piece of cloth, half linen, half cotton, of the make then in use, so that it was unsaleable. The father took the damaged web to his neighbours, the Cyaltons, and begged to have it printed with a pattern, so that it might be used for handkerchiefs in the family. This was done, but the charge for the printing was so high, that Peel determined he would try and find out the process, and be his own calico-printer another time. He made his experiments very quietly in the most secluded part of the house, and after a time he succeedd in engraving a parsley leaf, and transferring the impression in colour to a piece of cloth. His wife and daughters were out of the way at the critical moment, so Peel called in a neighbour, Mrs. Milton by name, and she performed for him the process of calendering with a flat iron.

The pattern was clear and sharply defined enough to satisfy the eager expermentalist. His only fear was whether the colour would prove sufficiently fast to resist the dissolving action of soap and water. The pattern was plunged in a strong lather, and well washed and rubbed, but remained quit unaltered. Finding how perfect his success was, Peel exclaimed, with a shout of delight, "I'm a made man!" From this time "Parsley Peel," as he was called by his neighbours, carried on the printing of calicoes at Peelfold, the women of his family ironing the pieces of cloth in an inner room, to keep out of the way of curious eyes. A good deal of jealousy was, however, excited in the surrounding district, and when it was further discovered that this ingenious man had also invented a new way of carding cotton wool, which made the process simpler and more rapid, a mob broke into Peelfold, and destroyed all his machinery. Peel set up fresh works at a short distance; these too were attacked, and spoiled by the populace. Fairly driven out of the country by the jealousy of his neighbours, he took refuge at Burton-on-Trent, in Staffordshire, where he carried on the spinning, weaving, and printing of cotton goods on a larger scale. Robert, the son of this "Parsley Peel," a man of great intelligence, enterprise, and power of mind, set up large print works at Bury. He became one of the principle manufacturers of England, amassed a large fortune ,became a member of Parliment, and was created a baronet. His son, the second Sir Robert Peel, of equal, if not greater abilities, was carefuly educated by his father, and destined for a political life. He fulfilled, most perfectly, that father's wishes, for he became one of the most eminent statesmen of the age.

The dyeing and printing of cotton goods, first carried on so successfully by the family of the Peels, is now performed in the following manner. The bleached calicoes are dyed before being printed, or printed before being dyed, according to the circumstances of the case. The dyeing takes place in large rooms, sometimes a hundred feet square, and always provided with a complete system of drainage, to carry off the immense quantity of soiled water which has to be got rid of every day. On entering a dye-house it is not likely that a stranger will be able at first to see the machines, the workmen, or anything that is going on,—all will be hidden from his eyes by the dense clouds of steam which rise from the various coppers and boilers. But as he gets accustomed to the atmosphere he will, perhaps, distinguish the various kinds of vessels ranged in rows from one end of the building to the other. There is the dash-wheel, a hollow circular wheel, having four compartments. Cloth is put into each of these compartments and water let in by a pipe; then the wheel is set to work and goes round rapidly, washing the cloth by the violent agitation which it makes. And there is the "beck," or tank, having over it a kind of frame-work moved round and round by a winch. The cloth is here wound or wrapped on the frame so as to dip in the liquid contained in the beck; and as the frame is moved round by means of a winch, every part of the cloth is dipped successively. Cisterns of various kinds are also there, in which the goods are put to steep without the aid of any machinery, and there is a beautiful contrivance by which the water is squeezed out of the cloth that has been soaking in them. This machine consists of a double vessel, the inner one of them being perforated with holes. The wet cloth is put into this inner vessel, and the machine turned round with such speed that it makes a thousand revolutions in a minute. This motion drives the wet cloth against the perforated sides and forces all the water through the little hole, so that the cloth is left nearly dry.

A large print and dye-work employs as many as a thousand workpeople, all arranged in different departments. There are the mechanical department, the chemical departments, besides others. The chemical effects of one drug upon another must be considered, as well as the degree in which the fibres of the vegetable wool will retain them and combine with them. Then the choice of the proper colour is to be thought of, and the way to make that colour fast. So attached to the print and dye-work you must expect to see quite a laboratory with retorts, sand-baths and furnaces,



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The designing department is also full of interest. Every piece of printed calico receives its impress either from a piece of metal or a piece of wood; the wood or metal having on its surface a device copied from a coloured drawing on paper. The drawing of these designs is an extensive branch of employment in Lancashire, for in the present day there is a perpetual demand for novelty in everything relating to dress. No matter how beautiful a pattern may be, no matter how much it has been admired, there can be no doubt that it will soon outlive its attractions, and be pronounced "out of fashion." After a design is sketched, a thorough examination of it takes place before it is printed; for the engraving is an expensive process not to be undertaken without some promise of success. Generally, not a quarter of the designs produced are considered wirth the risk, and of these but a small portion become real favourites with the public. Of five hundred patterns engraved, it was calculated that only a hundred were decidedly successful, fifty more tolerably so, while the rest were altogether failures. Forty years ago it was caluculated that designs were produced in Manchester at the rate of half a million a year. The number at the present must be far greater. After these patterns have been transferred to wood or metal plates, they are printed in colours on the cotton cloth. The cloth however, must have been previously wetted with a mordant, that is, with a liquid mixture, which enables the dye to combine permanently with the texture of the cloth, and this makes what is called a fast colour.

Formerly the printing of calicoes was effected by what was called the block method, which resembled a common printing press, but it was a very slow process, and about the year 1785 an invention was made which has to a great extent set the former plan aside. This is called the cylinder machine. The principle of copper-plate printing is here employed instead of that of common or press printing; that is to say the device is cut in a surface of wood. The action of this machine is very beautiful. There is the engraved cylinder placed horizontally and kept turning round so that it dips down into a trough containing colour, and there is a long knife so exquisitely smooth and regular and so cacurately adjusted that it scrapes every particle of colour from the surface of the cylinder, leaving the dye only in the engraved design, all the rest being so thoroughly cleansed that it passes over the cloth without soiling it. This knife, a very important appendage to the machine, is called "the doctor," a name which is accounted for in the print-works by the following story:—

In the first firm in which cylinder-printing was introduced, one of the partners was making experiments upon it, when a workman who stood by exclaimed, "All this is very well, sir, but how will you remove that superfluous colour off the surface of the cylinder?" The master took up a knife which lay near, and placing it against the revolving cylinder at once showed its action in removing the colour. While thus holding the knife he said to the man, "What do you say to this?" "Aye, aye, sir, you've doctored it," was the reply; and "the doctor" has that long knife been called ever since.

After the cylinder has picked up its colour in the through of dye, and been cleansed by the "doctor" of what was superfluous, the cloth is made to pass in a continuous strip between it and a large roller or drum, by which pressure enough is made to cause the cloth to imbibe the colour from the sunken device upon its surface. As the cylinder is continually coming in contact with it, the work goes on without interruption or break, which of course was not the case with block-printing.

There are machines of this kind which print several colours at once instead of ony one. In this case there are as many cylinders as colours required, each cylinder having a trough to dip in and a doctor to remove the needless colour; and the cloth passes in contact with each revolving cylinder in turn. What the nicety of adjustment must be which all the cylinders to print exactly in the proper places can hardly be conceived. And exactness does not hinder speed. Every cylinder machine print a piece of cloth in about a minute and a quarter, that is at the rate of three quarters of a mile in an hour. The quantity of work done in our larger print-works is better told in miles than in yards. The length of cotton cloth printed in some of them durng a year would thread the earth from pole to pole.

The work of a calico printer is a very delicate one on account of the variety of the means he makes use of, and also of the every-changing way of applying them. Take a hundred patterns of printed cotton, you will probably find that in, no two of them was the mode of proceeding exactly the same. Sometimes a piece of cloth is partially printed, then dyed, then printed again. Sometimes the dyeing comes first, sometimes the dyeing comes first, sometimes the printing. There are altogether four mixtures which are printed on the calico in different combination; the colour, or simple dye; the mordant, which enables the colouring matter to take firm hold of the texture of the cloth; the discharger, which, after the whole surface of the cloth has been dyed, discharges or removes the colour wherever it is applies; and the resist, which keeps certain portions white while all the rest is coloured. With these several powerful agents at his command, the calico printer need not ask himself what he can do in the way of dyeing, only how he can accomplish it best. He is not often aided by mere chance, but one such instance is on record. It is said that in a large print-work while the cloth was travelling upwards from the cylinder, a portion once became disarranged so as to be printed a second time, but in a different direction from the first. This accidental circumstance produced a new pattern, which was considered the most successful of the year in which this incident happened.

Some of the cottons intended for pocket-handkerchiefs are printed and dyed in a curious way, which may merit a little attention. Many of these articles are of a brilliant red colour with a pattern of white spots, and some of the details connected both with the dyeing and with the producing of the spots have a certain degree of interest.

The full rich of these handkerchiefs is known by the name of Turkey-red. The art of producing it seems to have been known first in India, from whence it travelled through Asia to Greece and Turkey. About a hundred years ago some Greek dyers were invited to settle in France; they came and brought with them the art of Turkey-red dyeing. From France the lesson was learnt by our countrymen, and at hte present day this kind of dyeing is carried on largely near Glasgow.

So complex and tedious a process it is that we cannot help wondering as we read about, how the handkerchiefs that have undergone so much can posibly be sold at so low a price. The cotton cloth, fresh from the loom, is first plunged into a hot solution of soda, to get rid of all the dressing which the weaver has put to the yarn before weaving it. This done, it is put into the dash-wheel, is well washed, and then squeezed dry in a press. We might have supposed the cloth was now ready for dyeing—nothing of the kind—a great deal must be done before it is fit to receive the bright, deep colour, which it is to bear. As a rule silk and wool, both animal fibres, take far more brilliant dyes than the vegetable fibre of cotton and flax. But by subjecting cotton to a great deal of boiling, and steeping, and exposure to the air, something may be done towards bringing its fibres to the same character with those of silk and wool.

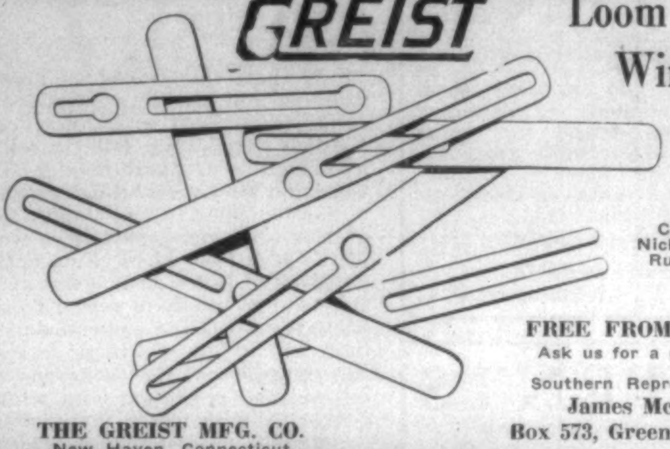
At the Turkey-red dye works, there is a large bleaching ground, and the cloth is repeatedly spread out upon the grass after being dipped into a mixture of alkali, soap, and other ingredients. It is first dipped, then "grassed," as it is called; dipped again, and again grassed. After this it is plunged three or four times over in a second sort of liquid, spread out upon the grass after each dipping, and dried in a stove after each grass. Nor is this all. The cloth is steeped three tmes more in as many different kinds of liquids, with washings, and squeezings, and dryings after each bath, except the last. And at every stage it is carefully examined, and slight variations made in the process according to the appearance it presents. Not that an ordinary observer would see much difference in it. No colour has yet been given to it.

The actual dyeing, however, is a simple process compared with all that went before. The cloth is dipped in a red liquor, and the alum which had been put into the last bath causes the dye to adhere to the cloth. After a litle more washing and boiling, it will be found of a uniform brilliant red colour. The chief ingredient in the dye is madder, a plant, one species of which may be found as a common weed in our copses and sandy waste pieces of ground.

But how is the piece of cloth which we have so carefuly watched to be covered with white spots, and turned into Bandana handkerchiefs? Not certainly in the way practised by the Hindoos, who first produced this kind of pattern and bestowed the Indian name of Bandana. They used to tie up with bits of thread the small portions which were to remain white, while they exposed the rest of the handkerchief to the operation of the dye. We accomplish the same end with an hydraulic press and bleaching liquid. Pieces of cloth, dyed red in the way we have described, or blue with indigo in a more simple manner, are laid, fourteen deep, one above another, perfectly smooth and flat, between two metal plates perforated with round holes, so as exactly to correspond above and below. A pressure of two or three hundred tons is laid upon the cloth between the two plates, and at the same time some liquid is poured into a trough above the upper plate. A few minutes later the man in charge turns a cock, draws off the liquor, and takes off the pressure. When the cloth is removed from the press a great change has taken place in it; the coloured surface is dotted with white spots, and what is curious, every one of the fourteen pieces is exactly alike, whether lying at the top, the bottom, or the middle of the heap. The red dye, which would have with stool all ordinary washing as long as a fragment of the cloth remained, it completely discharged, and leaves the spots perfectly white. The tight pressure, of course, was necessary to keep the liquid from spreading sideways beyond the margins of the holes and making the spots irregular, instead of perfectly round and smooth. By a little change in the liquid the spots may be made yellow.

Another way of dyeing handkerchiefs is curious. The pieces of cotton cloth is dipped into a vat and comes out of some uniform colour. It is then printed with some chemical agent in certain parts, without any change appearing, at the time, in the cloth. No sooner, however, is it plunged in a discharging vat than the printed portion appears in the form of a beautiful white or yellow pattern.

Some handkerchiefs, of course, are printed with the cylinder press like other cotton goods, some are prepared in other different ways. The number of handkerchiefs exported from Liverpool and Glasgow to all parts of the world is very great. All have been carefully prepared with a view to the countries to which they are to be sent. For the home market patterns without any particular character are found to answer best; curves, zigzags, stripes, spots. All imaginable shapes are combined into patterns, pleasing to the eye, yet representing no actual objects. The Chinese market, on the other hand, requires patterns in which natural objects are depicted, especially birds and flowers. In the South American States, there is a demand for the most gorgeous mixture of colours possible; the design is of no particular consequence, but there must be large masses of the deepest red, blue, and yellow. Quieter hues meet the German taste, but the subjects must be pictorial; such as copies of celebrated paintings and sculptures, or views of cathedrals, castles, and public buildings. Thus national character peeps out even in the choice of pocket-handkerchiefs, nad very curious



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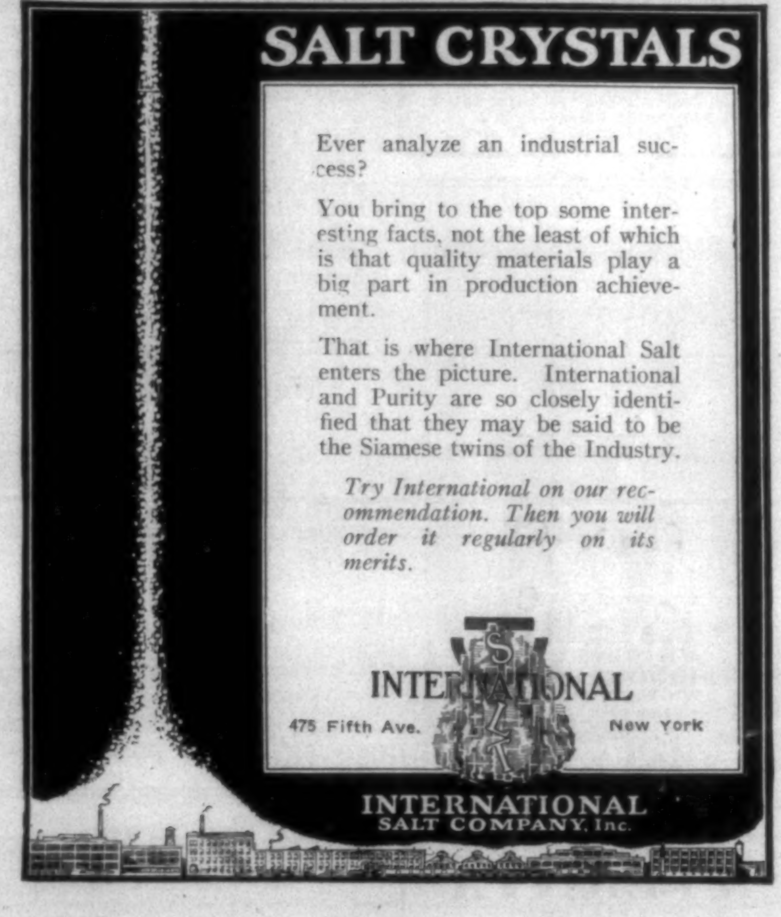

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it is to watch the workings of it. This has long been done by the manufacturers, who classify their patterns according to the places for which they are destined.

We have thus traced the fleece of the wool-bearing shrub through the spinning-mill and the power-loom, have seen it worked up into a variety of fabrics, printed with every description of pattern, coloured with every possible hue. Time fails to tell of th wonderful growth of the cotton manufacture of Great Briatin, till at last a thousand million pounds of vegetable wool were brought within a twelve month into our ports; thirty million spindles turned it into thread, and eighty thousand power-looms exerted their giant strength in weaving it into different fabrics. This was in the year 1860, when "King Cotton" was considered in the height of his prosperity. But a change was at hand. The terrible civil war in America stopped our supply of cotton from that country, and the cotton famine in Lancashire was the consequence. We must not pause to tell the tale of that famine, full of pathetic interest as it is. We have not space to tell of the sufferings of the thousands suddenly deprived of work, of the submission and resolution with which they met those sufferings, or of the generosity with which the masters and mill owners first ,and the whole population of Great Britain afterwards, rose up to relieve them.

When peace was restored to the United States, cotton began to find its way again from Georgia and Carolina to Liverpool. The supply, small at first, and of a far inferior quality to that of former times, increased year by year, and improved also. In other parts of the world efforts were made tc supply our want of vegetable wool. More care was bestowed in India upon the cotton plantation, both in cultivating and gathering in the crop. Australia began to send choice specimens of cotton to the mother country. Egypt and the Brazils furnished their quota. So the quantity of vegetable wool imported into Great Britain gradually increase till, in 1870, it exceeded that of the famous year 1860. The supply increases still. In the year 1873 more than 1,266,000,000 pounds of cotton passed through our mills, while above £77,000,000 were received in this country for cotton goods exported. It is calculated that in the year 1874, 35,895,221 spinning spindles are at work turning into thread the fleece of the wool-bearing shrub, while 446,766 looms are weaving that thread into materials for the clothing of the human race.

The End.

World Supply and Distribution of American Cotton

(Exclusive of Linters)

	1921-1922	1922-1923	1923-1924	1924-1925	1925-1926
Supply.					
Carry-over August 1	9,944,000	5,671,000	3,370,000	2,754,000	3,592,000
Ginnngs. after Aug. 1	7,978,000	9,714,000	10,106,000	13,618,000	15,942,000
Ginnngs. in July....	15,000	64,000	22,000	162,000	150,000
City Crop, etc......	222,000	309,000	182,000	200,000	200,000
Total	18,159,000	15,758,000	13,680,000	16,734,000	19,884,000
Distribution.					
Consumption	12,488,000	12,388,000	10,926,000	13,142,000	13,900,000
Carry-over July 31.	5,671,000	3,370,000	2,754,000	3,592,000	5,984,000
Total	18,159,000	15,758,000	13,680,000	16,734,000	19,884,000

Cotton Mill Processes and Calculations

(Continued from Page 38)

tion machinery. There may, with propriety, be even more than the above allowance to provide for changes in the organization. On the other hand, the allowances might de diminished, with a view to finally making finer goods than those on which the mill is to start. This is because the finer the yarn, the fewer pounds can be spun, and the smaller the amount of carding and other preparation machinery required.

412. After the equipment is determined upon for making the yarn, as above, the machines must be computed for further disposition of the yarn, whether for weaving on the premises, or for sale as yarn. If the former case, the number of spoolers, warpers, slashers, looms and cloth room machines must be determined. If in the latter case, it is necessary to determine (with the aid of production tables,) the number of spoolers, twisters, warpers, reels, cone winders, etc., according to style in which yarn is to be sold.

Finally will be determined the amount of power to operate the mill.

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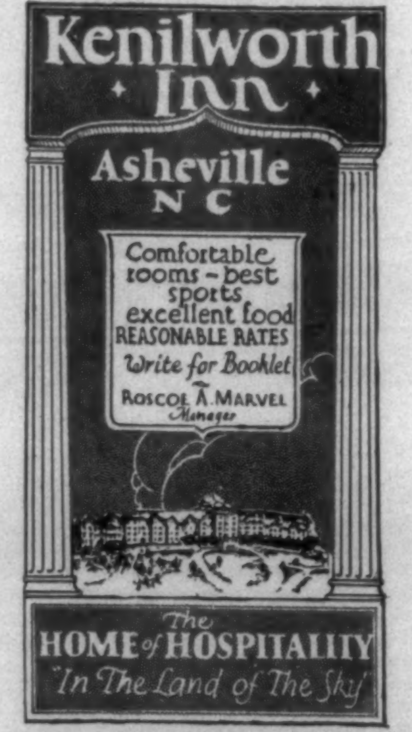

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(Continued from Page 7)

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Arthur W. Dixon, Trenton Cotton Mills, Gastonia, N. C.
C. W. Johnston, Highland Park Mfg. Co., Charlotte, N. C.
George E. Spofford, Langley Mills, Langley, S. C
J. D. Woodside, Woodside Cotton Mills Co., Greenville, S. C.
W. A. Erwin, Erwin Cotton Mills Co., West Durham, N. C.
Howard Baetjer, Mt. Vernon-Woodberry Mills, Baltimore, Md
John Law, Saxon Mills, Spartanburg, S. C.
A. H. Bahnson, Winston-Salem, N. C.
A. W. McClellan, Alden Mills, New Orleans, La.
Hunter Marshall, Charlotte, N. C.
W. D. Adams, Charlotte, N. C.
Floyd Jefferson, Judson Mills, Greenville, S. C.
Leavelle McCampbell, Sibley Mills, Augusta, Ga.
Saul F Dribben, Cone Export & Com. Co., Greensboro, N. C.

Need of Fibre Knowledge

(Continued from Page 10)

front, a little closer thon the length of the long cotton and take the weight off of the middle roller. Good results can be obtained this way, but only when the cotton is suited to the numbers will the mills get the best results.

About two years ago, fifty bales of cotton came to a mill where I was running one of the rooms. The superintendent remarked that is was very pretty white cotton and should run fine in 30 yarns. After examining the staple, I advised them not to use it as the staple was not up to the length they bought. But nothing would do except to put it in the mill. I ran through few laps of it and kept it separate until it reached the spinning and had the spinner put it in five frames. Spinners that had been running 12 sides of 128 spindles each could not keep up one side After showing it to the management, we ran the roving stock into filling and carried all the stock out, rebaled it and had it returned. Yes, we might have mixed one bale of this cotton with ten bales of better cotton and got it through the mill, but it would have been detrimental to good weaving and good cloth.

Only the manufacturers and the cotton merchants can cooperate to the advantage of both, because the merchant knows where he gets the cotton and can let the manufacturers know it. The manufacturer will know whether or not it will suit his mill and the goods he is making. Every mill man who has used Mississippi delta cotton knows its value in manufacturing, but Canton and Corinth are both in Mississippi and it is impossible to grow as good staple cotton in the section around these two towns as is grown in the delta, as the soil is not as good and cannot be made to equal the delta soil.

Some ten years ago I was running a mill in northern Alabama. During my first year on the job I had considerable trouble with a short, stiff stapled cotton which I found was called "half-and-half." This cotton received its name from the fact that it was supposed to produce half lint and half seed, while other cottons produced one-third lint and two-thirds seed. I learned to refuse every bale of half-and-half because of its spinning qualities, which were very poor. I soon found that many farmers would mix the seed and get the cotton off on the buyer that way. As the staple was only about three-fourths to seven-eighths in length it would be detected in any cotton when used or carefully graded, but it would not produce a good, strong yarn. Neither would it spin well under any conditions, but as it was planted all over that section, it went to some of the mills and caused trouble for them until the merchants refused to buy and ship it on account of so many complaints against it. Then the farmers quit planting it.

It is hard to get anyone to cooperate with you unless the advantage in dollars is on his side. We know there are certain farms in the cotton States that will produce a good fibre regardless of the quality of seed planted. The variation in length of staple and grades will remain just as they are just as long as there is such a difference in the soil where the cotton is grown.

H. P. W.

Two Stores Sell 38,000 Pairs Hose in One Day

Buffalo, N. Y.—Is it possible to sell 18,000 or 20,000 pairs of hosiery in one or two days?

Two Buffalo department stores answer in the affirmative for both of them have done it and one of these stores even went a step further and repeated their former success in a two-day hosiery promotion the next week. The stores which accomplished this record-breaking sale of women's full-fashioned silk hose were the William Hengerer Co., Inc., and E. W. Edwards & Son Co., Inc. The price at both stores was $1.

"We realized," said the manager of one store, "that in order to sell 18,000 pairs in a single day, we would have to divide up the shipment into pairs and also sort out the colors so that shoppers could make quick selections. Experienced sales clerks who are quick in handling customers were detailed to these special tables and with the aid of large size newspaper space and special window displays, the entire lot was sold out during the first day, which was a record breaker for the hosiery section. Not only were we able to sell 18,000 pairs at these bargain tables but sales in our regular hosiery department showed a big gain and sales increases were reported in almost every department of the store. Many shoppers took a dozen pairs, others purchased the hose in half dozen lots, Mr. Burlingame explained.

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Cotton Yarns, Combed Peeler, Carded Singles and Ply, Audrey Spinning Co., Weldon, N. C., Mandeville Mills, Carrollton, Ga., Mills Mill, No. 2, Woodruff, S. C., Wabena Mills, Lexington, N. C., White Hall Yarn Mills, White Hall, Ga.
Grey Goods, Print Cloths, Twills, Sheetings, Pajama Checks, Arcadia Mills, Spartanburg, S. C., Clinton Cotton Mills, Clinton, S. C., Hermitage Cotton Mills, Camden, S. C., Mills Mill, Greenville, S. C., Osage Mfg. Co., Bessemer City, N. C.

Cotton Goods

New York.—Trading in cotton goods continued on practically the same basis as during the preceding week. Most of the business was limited to small orders wanted for early delivery, with an occasional larger contract for forward shipment.

Trading in print cloths was for a fair variety of construction. Sales of 64x60s were at 7½ cents and 68x72s at 8½ cents. Some 80 squares were taken at 10⅝ cents, July in good quantities being possible at 10¼ cents. Trading in 60x48s was at 6¼ cents, 7.15-yard, 5⅝ cents, 8.20-yard 5 cents, 72x76s 9½ cents, 27-inch 64x60s 5 cents. Mills quoted 88x80s 5-yard 12½ cents, 64x56s 7¼ cents, 6.40-yard 6⅜cents, 6.60-yard 6⅛ cents, 38½ inch 9.20-yard 5 cents.

Sales of sheetings included 36-inch 3-yard at 11 cents, 36-inch 5-yard 7 cents, 31-inch 5-yard at 6¾ cents, 36-inch 5.50-yard 6¼ cents, 40-inch 2.85-yard 11⅜ cents, with 11¼ cents quoted for July. A few 40-inch 3.75-yard were taken at 8¾ cents, July 40 square 6.15-yard 5⅞ cents and spots of 44x40s 6 cents. The market held firm on 36-inch 3.25-yard at 10¼ cents spots and 10 cents later; 37-inch 3.50-yard 9½ cents, 56x60s 4-yard 9⅛ cents and 9 cents. 4.70-yard 7⅝ cents, 40-inch 5-yard 7⅜ cents, 40-inch 5.50-yard 7 cents.

Bids of one-quarter of a cent under the market on 90x60 and 100x60 carded broadcloths have brought out a few spots or one or two of the fair makes during the last few days, but the best qualities others still being quoted at the recent levels. On the 90x60s, certain makes were reported at 9¾ cents, others were being held at seven-eighths. A fair make of 100x60 sold at 10½ cents; other were held at three-quarters. Most centers reported the situation in 128x68 all-combed containing featureless. Certain choice makes have sold in second hands this week at 17½ cents, small lots. Other good makes were available at 17 to 17¼ cents, first hands and fair makes at around 16½ and 16¾ cents. One or two of the poorer Eastern makes, full count, were reported offered at 16 cents and earlier in the week had sold at 16¼ cents.

Fine goods mills are reported to be holding relatively small stocks of gray goods though they appear large relative to demand. During the past week there were hand clearances of goods of a staple and fancy character. In some instances the quantities have been large though not especially so for the mills doing the business.

While there is somewhat more price regulation in silk and cotton mixtures reports occasionally indicate that some mills have goods to sell at under competitive prices. Buyers find concessions are subject to the mills' standing, the best makes being bought at higher prices and some of the poorer makes neglected.

There is considerable hesitancy about covering cotton duck requirements through the fall period. Jobbers have felt no incentive to purchase further ahead than is necessary. Leaders among wholesalers find they must contract ahead on various numbers but hesitate to anticipate more than four to six weeks.

There has been a fair recent business in print cloth yarn dobbies, on contract, on the basis of 50 cents a pound.

Smattering lots were reported in the Fall River market with nothing of interest developing. Quotations remain unchanged with mills disinterested in contracts, which have been offered at ridiculous prices.

As a whole trade in cotton goods continued rather quiet, with mail orders and salesmen's road orders showing a steady gain but usually in small bills. The tone of the markets is slowly getting better and the effect of curtailed production is becoming more apparent.

Cotton goods prices were quoted as follows:

Print cloths, 28-in., 64x64s.	5¼
Print cloths, 28-in., 64x60s.	5¼
Print cloths, 27-in., 64x60s.	5½
Gray g'ds., 38½-in., 64x64s.	8
Gray goods, 39-in., 68x72s..	8½
Gray goods, 39-in., 80x80s..	10¾
Brown sheetings, 3-yard...	12¼
Brown sheetings, 4-yard...	10
Brown sheetings, stand.....	13¼
Ticking, 8-oz.	20 a21
Denims	15½
Staple ginghams, 27-in., ..	9
Kid finished cambrics	8½a 9
Dress ginghams	12½a16½
Standard prints	9½

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Extra staples, and good 1 1-16 and 1⅛ cotton from Arkansas, Oklahoma, and Texas, and Memphis territory.

The Yarn Market

Philadelphia, Pa.—There was no sign of improvement in the yarn market during the week and many dealers and spinners reported that it was the dullest week of the year. Buyers continue their policy of palcing only very small orders as they need yarn for their immediate reqirements. Under present market conditions it is not expected that they will be inclined to anticipate their needs for some time to come.

Curtailment among Southern yarn mills showed a further increase during the week. Spinners are reported as being working full time only where they have orders on hand. Other mills are working only on orders and reducing operations as contracts are filled.

A survery of curtailment by the Southern Yarn Spinners Association indicated that in the mills which reported on their operations, curtailment ranges from 17 to 75 per cent, with an average curtailment of about 45 to 50 per cent. The mills reporting this curtailment represent about 750,000 spindles.

The day to day trading was principally made up of small lots of carded knitting and weaving yarns, with the latter being reported as somewhat better than knitting yarns. Combed and mercerized yarns continued very slow.

Quotations in this market were generally lower than spinners prices and were regarded as merely nominal.

Southern Two-Ply Chain Warps.

8s	29 a29½
10s	30 a30½
12s	30 a31
16s	32 a33
20s	33½a34
24s	36 a36½
26s	37 a37½
30s	39½a40
40s	50 a52
40s ex.	57 a58
50s	67 a__

Southern Two-Ply Skeins.

8s	28 a__
10s	29 a__
12s	30 a__
14s	31 a__
16s	31½a32
20s	33 a33½
24s	35½a__
26s	36½a__
30s	39 a40
36s	47 a48
40s	49 a50
40s ex.	56 a58
50s	65 a66
60s	74 a75
Tinged Carpet 3 and 4-ply	26 a27
White Carpet 3 and 4-ply	30 a31

Part Waste Insulated Yarn.

6s, 1-ply	23 a__
8s, 2, 3 and 4-ply	23½a24
10s, 1-ply and 3-ply	25 a__
12s, 2-ply	26 a__
16s, 2-ply	28½a__
20s, 2-ply	30 a31
26s, 2-ply	35½a36
30s, 2-ply	37 a38

Duck Yarns—3, 4 and 5-ply.

8s	29 a__
10s	30 a__
12s	31 a__
16s	32 a__
20s	33½a__

Southern Single Chain Warps.

10s	30 a__
12s	30½a__
14s	31 a__
16s	31½a32
20s	32½a33
24s	35 a36
26s	36½a37
30s	39½a40
40s	__a51

Southern Single Skeins.

6s	29 a__
8s	29 a__
10s	29½a__
12s	30 a__
14s	30½a31
16s	31 a32
20s	33 a__
22s	34 a__
24s	35 a__
26s	36½a__
30s	40 a__

Southern Frame Cones.

8s	28½a__
10s	29 a__
12s	29½a__
14s	30 a__
16s	30½a__
18s	31 a__
20s	32 a__
22s	32½a33
24s	33½a34
26s	34½a__
28s	35½a__
30s*	35 a35½
30s	36 a36½
40s	48½a__

Southern Combed Peeler Skeins, Etc.—Two-Ply.

16s	51 a__
20s	53 a__
30s	58 a__
36s	63 a__
40s	65 a67
50s	70 a72
60s	75 a76
70s	85 a88
80s	1 05a__

Southern Combed Peeler Combs.

10s	40 a__
12s	41 a__
14s	42 a__
16s	43 a__
18s	44 a__
20s	45 a
22s	46 a47
24s	49 a__
26s	49½a__
28s	50 a__
30s	53 a__
32s	54 a
34s	56 a57
36s	59 a__
38s	60 a__
40s	61 a
50s	69 a70
60s	75 a76
70s	85 a88
80s	1 05a__

Eastern Carded Peeler Thread—Twist Skeins—Two-Ply.

20s	48 a__
22s	49 a
24s	50 a__
30s	54 a__
36s	57 a__
40s	61 a__
45s	68 a__
50s	73 a__

Eastern Carded Cones.

10s	35 a__
12s	36 a__
26s	45 a__
28s	47 a__
30s	49 a__
14s	37 a__
20s	38 a__
22s	41 a__

Southern Spinners' Bulletin

The weekly bulletin of the Southern Yarn Spinners Association says:

Trading in yarns is confined almost entirely to small quantities for immediate shipment. Even the present low level of prices does not tempt the buyers to anticipate their wants.

The Philadelphia market reports that prices on yarn have receded during the past week, but even this concession has not stimulated business.

Partial replies to a questionnaire concerning curtailment among the spinners has shown that of 750,000 spindles reporting, curtailment at present ranges from 17½ per cent of normal day-time run to 75 per cent, an average of between 40 and 50 per cent curtailment of day operations. This report indicates that spinners are operating solely on orders, and in the absence of orders are instituting immediate and effective curtailment.

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to any experienced cotton man, who has a paid up 10,000 spindle cotton factory outfit, and wants either to branch out with one in the cotton belt of the greatest cotton State in the Union, or who is financially in a distressed condition and needs funds to set him back on his feet. For more details advise M. Levinson, Colorado, Texas.

Wanted—South

An experienced and energetic overseer for sewing room. Pillow cases and towels—25 machines. Address J. E. M. care Southern Textile Bulletin.

Technical graduate with 9 years' experience in cotton mill work, covering mill design, construction and maintenance, also have had broad experience in purchasing, payroll and cost accounting, thoroughly familiar with all manufacturing problems, would like position with large mill or group of mills. Would prove valuable as assistant to managing executive. Address "Assistant," care Southern Textile Bulletin.

Patents and Manufacturing Plant For Sale

Company, owning and controlling a number of patents for textile looms. This company is well established, having their own plant, and some remarkable devices showing a large profit. Address W. S. M., care Southern Textile Bulletin.

Wanted

Man to install Cotton Mill Machinery. Must have some mill experience and High School education. Apply in own handwritting, giving age, mill experience and state whether married or single. Address "Machinery" care Southern Textile Bulletin.

For Sale

1 Filer & Stowell 20"x48" right hand heavy duty Corliss Engine, with rope drive; in excellent condition. Price $1,500 f. o. b. cars here.

1 Commercial Electric Co. 30 to 35 K. W. D. C. Generator, 125 volts; speed 625 R.P.M.; fine condition; with switchboard complete. Price $350 f. o. b. cars here.

1 Stillwell-Bierce 300 H. P. open type Feed Water Heater; like new. Price $300 f. o. b. cars here.

1 Erie Center Crank 11"x15" Steam Engine; fine condition. Price $200 f. o. b. cars here.

1 Gardner Duplex Steam Pump, 7"x4½"x10"; in good condition. Price $100 f. o. b. cars here.

J. D. Kennedy, Moorhead, Miss.

For Sale

Half interest in thriving used textile machinery firm located in North Carolina. Splendid chance for young textile graduate. Address "Opportunity," care Southern Textile Bulletin.

For Sale

A complete set of Kay's roller covering machinery. Practically new. Address P. O. Box 573, Greenville, S. C.

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EMPLOYMENT BUREAU

The fee for joining our employment bureau for three month is $2.00, which will also cover the cost of carrying a small advertisement for two weeks.

If the applicant is a subscriber to the Southern Textile Bulletin and his subscription is paid up to the date of his joining the employment bureau the above fee is only $1.00

During the three months' membership we send the applicant notices of all vacancies in the position which he desires and carry small advertisements for two weeks.

We do not guarantee to place every man who joins our employment bureau, but we do give them the best service of any employment bureau connected with the Southrn Textile Industry.

WANT position as master mechanic. Twelve years experience and can give good references. No. 4886.

WANT position as superintendent of yarn mill, white or colored work. Have had 20 years experience on knitting yarn, mostly colored. Have held present place 12 years. Married, have family. Good references. No. 48887.

WANT position as roller cover. Have had 20 years experience in this work and can produce excellent results. Good references. No. 4888.

WANT position as designer or assistant superintendent in fancy goods mill. Graduate of textile college, 3 years in various departments. Good references. No. 4889.

WANT position as cloth room overseer by young man 26 years old, 6 years experience in dimity and fancy cloths. Excellent references. No. 4890.

WANT position as overseer spinning. Experienced and reliable man who can handle spinning room in efficient manner. First class references. No. 4891.

WANT position as overseer of weaving Experienced on wide variety of looms and can keep room producing on economical basis. A-1 references. No. 4892.

WANT position as superintendent, carder or carder and spinner in yarn mill or plain weave mill. Now employed as spinner. Age 36. I. C. S. graduate. Good references. No. 2893.

WANT position as overseer weaving. Practical man of long experience and can get excellent results. First class references. No. 4894.

WANT position as overseer large card room or as overseer carding and spinning. Age 26, I. C. S. graduate in carding and spinning. Now employed as carder and spinner. Been on present job 4 years and will guarantee satisfaction. Could handle place as superintendent of small yarn mill. No. 4896.

WANT position as superintendent or manager. Practical mill man with excellent training in good mills. Would appreciate opportunity of corresponding with mill needing high class man. No. 4897.

WANT position as superintendent or overseer weaving in large mill. I. C. S. graduate. Qualified to handle either job. Good references. No. 4898.

WANT position as overseer weaving. Plain or fancy goods. Fifteen years experience, mainly on fancy goods. references. No. 4899.

WANT position as overseer weaving on sheetings, print cloths, drills, osnaburgs, bagging, toweling, plain white satins or mohair. Have had 21 years in weaving, 5 years as overseer, 8 years as fixer and 8 as night overseer. Age 39, I. C. S graduate Good references. No. 4900.

WANT position as master mechanic or electrician. Experienced on both steam and electric drive, and can give satisfaction. Good references. No. 4901.

WANT position as overseer weaving, either plain or fancy work, and am experienced on dobby and Jacquard work. Now employed on job I have run satisfactorily for 3 years, but wish another place. No. 4902.

WANT position as overseer weaving. Prefer Southern mill. Now employed as weaver, 5 years on present job. Am giving satisfaction but wish larger palce. Experienced on drills, twills, ducks, sateens, sheetings, towels, staple and fancy ginghams. Twelve years as overseer, age 38. Married, sober, reliable and good manager. No. 4903.

WANT position as superintendent or overseer spinning. Familiar with tire ducks, cords, hosiery yarns and ply yarns. Can give best of references. No. 4904.

WANT position as superintendent of yarn or cloth mill. Long experience in good mills and would handle either place in satisfactory manner. Good references. No. 4905.

WANT position as overseer weaving. Long practical experience and can operate all makes of looms on efficient manner. Best of references. No. 4906.

WANT position as overseer carding. Would accept night job. Now employed as second hand. Age 33, and can give excellent references. No. 4907.

WANT position as overseer carding or second hand in large room, or night carder. Give first class references from present employers. No. 4908.

WANT position as overseer carding or spinning, or both. Practical, experienced man who has long record of satisfactory service. No. 4909.

WANT position as second hand in spinning. Have had 6 years in spinning. Age 21, married and can get results with help. No. 4910.

WANT position as roller coverer. Mill job preferred. Will go anywhere in South. High class workman. Best of references. No. 4950.

WANT position as overseer carding; 25 years experience, age 47, married and have family. Reliable, practical man who can produce results. Now employed. Excellent references. No. 4911.

WANT position as superintendent, or overseer carding or spinning. Have long experience as overseer and understand office work. Good references. No. 4912.

WANT position as overseer carding; 14 years experience. Making good on present job but have good reasons for cchanging. No. 4913.

WANT position as superintendent of small mill, or spinner in large mill. Long experience in good mills. Can come on short notice. First class references. No. 4914.

WANT position as superintendent. Now have superintendent's place, but wish better position. Experienced, reliable man of good habits and am first class mill man. Good references. No. 4915.

WANT position as bookkeeper, shipping clerk or office man. Age 28 and have had good experience. First class references. No. 4916.

WANT position as overseer carding or spinning, prefer spinning, but am good carder. I. C. S. course in carding and spinning; 19 years experience. Now employed but wish to change. Excellent references. No. 4917.

WANT position as superintendent. High class, educated man who has held high position with important mills. Now employed, but would like to correspond with large mill needing superintendent or manager. No. 4918

WANT position as overseer of weaving. My experience covers wide range of fabrics and I can get quality production at the right cost. Excellent references from past and present employers. No. 4919.

WANT position as overseer carding and spinning or superintendent. Have had long experience as carder and spinner and as second hand and overseer. Competent reliable man of good habits. Good references. No. 4920.

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Saco-Lowell Shops
Whitin Machine Works.

Automatic Lint Cleaners—
T. C. Entwistle Co.

Automatic Stop Motion—
Eclipse Textile Devices, Inc.

Automatic Yarn Cleaner—
Eclipse Textile Devices, Inc.

Ball Bearing—
Charles Bond Company.

Balers—
Dunning & Boschert Press Co., Inc.
Economy Baler Co.
Rex Engineering Corp.

Baling Presses—
Dunning & Boschert Press Co., Inc.
Economy Baler Co.
Rex Engineering Corp.

Bands and Tape—
American Textile Banding Co.

Baskets—
Charles Bond Company.
W. T. Lane & Bros.
Wckwire Spencer Steel Co.

Beaming and Warping Machinery—
Barber-Colman Co.
Cocker Machinery & Foundry Co.
Draper Corporation.
Easton & Burnham Machine Co.
T. C. Entwistle Co.
Saco-Lowell Shops.

Beam Heads—
T. C. Entwistle Co.
Frank Mossberg Corp.
Mossberg Pressed Steel Corp.
Saco-Lowell Shops.

Beams (Section)—
Washburn

Beams (All Steel)—
T. C. Entwistle Co.
Frank Mossberg Corp.
Mossberg Pressed Steel Corp.
Saco-Lowell Shops.

Beaming Combs—
T. C. Entwistle Co.
Easton & Burnham Machine Co.
Steel Heddle Mfg. Co.

Bearings (Roller)—
Charles Bond Company
Hyatt Roller Bearing Co.

Bearings (Shaft)—
Charles Bond Company
Hyatt Roller Bearing Co.
William Sellers & Co., Inc.
Woods, T. B. & Sons Co.

Bearings (Textile Machinery)—
Charles Bond Company
Hyatt Roller Bearing Company

Belt Conveyors—
Link-Belt Co.
Wickwire Spencer Steel Co.

Belt Conveyors (Spiral and Woven)—
Wickwire Spencer Steel Co.

Belt Tighteners—
Charles Bond Company
Link-Belt Co.
Woods, T. B. & Sons Co.

Belting—
The Akron Belting Co.
Charles Bond Company
Charlotte Leather Beltng Co.
Druid Oak Belting Co.
Graton & Knight Mfg. Co.
E. F. Houghton & Co.
Edward R. Ladew Co.
Schachner Leather & Belting Co.

Belt Cement—
Charles Bond Company
Edward R. Ladew Co.
Graton & Knight Mfg. Co.
E. F. Houghton & Co.

Belt Dressing—
Charles Bond Company

Belt Lacing—
Charles Bond Company
Chicago Belting Co.
Edward R. Ladew Co.
E. F. Houghton & Co.
Graton & Knight Mfg. Co.

Belting (Link)—
Charles Bond Company.
Link-Belt Co.

Bicorbonate of Soda—
Mathieson Alkali Works, Inc.

Bleacheries—
Joseph Bancroft & Sons Co.

Bleaching Materials—
Arabol Mfg. Co.
Arnold, Hoffman & Co., Inc.
L. Sonneborn Sons, Inc.
National Oil Products Co., Inc.
Bosson & Lane.
Seydel Chemical Company.
J. B. Ford Co.
National Anline & Chemical Co.
United Chemical Products Co.
Wolf, Jacques & Co.

Bobbin Holders—
Fournier & Lemoine.

Bobbins and Spools—
American Bobbin Co.
David Brown Co.
Courtney, Dana S. Co.
Draper Corporation.
Lestershire Spool & Mfg. Co.
Lowell Shuttle Co.
Frank Mossberg Corp.
Mossberg Pressed Steel Corp.
Walter L. Parker Co.
Steel Heddle Mfg. Co.

Boxes—
Wilts Veneer Co.

Box Shooks—
Wilts Veneer Co.

Blowers and Blower Systems—
Carrier Engineering Co.
Parks-Cramer Co.

Breton Mineral Oil—
Borne, Scrysmer Co.

Brushes—
Atlanta Brush Co.
Curtis & Marble Machine Co.

Brushing Machines—
Curtis & Marble Machine Co.

Bobbin Stripper—
Terrell Machine Co.

Calenders—
H. W. Butterworth & Sons Co.
B. F. Perkns & Son, Inc.
Textile Finishing Machinery Co.

Calender Roll Grinders—
B. S. Roy & Son Co.

Cards—
Saco-Lowell Shops.
Whitin Machine Works
Woonsocket Machine & Press Co., Inc.

Card Clothing—
Ashworth Bros.
Charlotte Mfg. Co.
Howard Bros. Mfg. Co.
Wickwire Spencer Steel Co.

Card Grinding Machinery—
Easton & Burnham Machine Co.
Dronsfield Bros.
T. C. Entwistle Co.
Roy, B. S. & Son Co.
Saco-Lowell Shops.
Whitin Machine Works
Woonsocket Machine & Press Co., Inc.

Carrier Aprons—
Link-Belt Co.
Wickwire Spencer Steel Co.

Caustic Potash—
A. Klipstein & Co.

Caustic Soda—
Arnold, Hoffman & Co., Inc.
A. Klipstein & Co.
Mathieson Alkali Works, Inc.

Chain Belts and Drives—
Charles Bond Company.
Link-Belt Co.
Morse Chain Co.

Chemicals—
L. Sonneborn Sons, Inc.
J. B. Ford Co.
Hart Products Corp.
A. Klipstein & Co.
Mathieson Alkali Works, Inc.
National Oil Products Co.
Seydel Chemical Co.
Seydel-Woolley Co.

Cleaning Agents—
Oakley Chemical Co.
Woodley Soap Mfg. Co.

Cloth Presses—
Economy Baler Co.

Clutches (Friction)—
Charles Bond Company
Textile Finishing Machinery Co.
Woods, T. B. Sons Co.

Cloth Winders and Doublers—
Curtis & Marble Machine Co.

Clutch Spindles—
Fournier & Lemoine.

Coal Handling Machinery—
Link-Belt Co.

Combs—
Steel Heddle Mfg. Co.

Combs (Beamers, Warpers, Slashers)—
T. C Entwistle Co.
Easton & Burnham Machine Co.

Commission Merchants—
Catlin & Co.
The Farish Co.
J. H. Lane & Co.
Mauney Steel Co.
Paulson, Linkroum & Co.
Ridley Watts & Co.

Compressors (Air)—
Allis-Chalmers Mfg. Co.

Condensers—
Allis-Chalmers Mfg. Co.

Conditioning Machines—
American Moistening Co.

Conduit Fittings—
Chicago Fuse Mfg. Co.

Cones (Paper)—
Sonoco Products Co.

Cone Vice Couplings—
William Sellers & Co., Inc.

Conveying Systems—
Link-Belt Co.

Coolers (Air)—
——See Humidifying Apparatus.

Cotton—
Lesser-Goldman Cotton Co.
Stewart Bros. Cotton Co.
S. B. Tanner, Jr.
Wm. & York Wilson.

Cotton Machinery—
Ashworth Bros.
Barber-Colman Co.
Collins Bros. Machine Co.
Crompton & Knowles Loom Works.
Dixon Lubricating Saddle Co.
Draper Corporation.
Easton & Burnham Machine Co.
T. C. Entwistle Co.
Fales & Jenks Machine Co.
H. & B. American Machine Co.
Hopedale Mfg. Co.
Rodney Hunt Machine Co.
National Ring Traveler Co.
Roy & Son, B. S.
Saco-Lowell Shops.
Southern Spindle & Flyer Co.
Stafford Co., The
Terrell Machine Co.
Tolhurst Machine Works.
Universal Winding Co.
Whitin Machine Works.
Whitinsville Spinning Ring Co.
Woonsocket Machine & Press Co., Inc.

Cotton Openers and Lappers—
Saco-Lowell Shops.
Whitin Machine Works.
Woonsocket Machine & Press Co., Inc.

Cotton Softeners—
Arabol Mfg. Co.
Arnold, Hoffman & Co., Inc.
Bosson & Lane.
Hart Products Corp.
E. F. Houghton & Co.
A. Klipstein & Co.
National Oil Products Co.
Seydel Chemical Co.
Seydel-Woolley Co.
L. Sonneborn Sons, Inc.
Wolf, Jacques & Co.

Cotton Waste Machinery—
Saco-Lowell Shops.
Whitin Machine Works.
Woonsocket Machine & Press Co., Inc

Couplings (Shaft)—
Charles Bond Company.
William Sellers & Co., Inc.
Woods, T. B. Sons Co.

Cranes—
Link-Belt Co.

Dobby Chain—
Crompton & Knowles Loom Works.
Rice Dobby Chain Co.

Doffing Boxes—
Rogers Fibre Co.

Doublers—
Saco-Lowell Shops.
Textile Finishing Machinery Co.
Universal Winding Co.

Drawing Rolls—
Metallic Drawing Roll Co.

Drink Fountains—
Puro Sanitary Drinking Fountain Co.

Drives (Silent Chain)—
Charles Bond Company.
Link-Belt Co.
Morse Chain Co.

Drop Wires—
Crompton & Knowles Loom Works.
Draper Corporation.
Hopedale Mfg. Co.
Mossberg Pressed Steel Corp.
R. I. Warp Stop Equipment Co.

Dryers (Centrifugal)—
Roy, B. S., & Son Co.
Tolhurst Machine Works.

Dyeing, Drying, Bleaching and Finishing Machinery—
Cocker Machine & Foundry Co.
H. W. Butterworth & Sons Co.
Franklin Process Co.
Perkins, B. F. & Sons, Inc.
Rodney Hunt Machine Co.
Textile Finishing Machiney Co.

Dyestuffs and Chemicals—
Borne, Scrysmer Co.
Bosson & Lane.
E. I. du Pont de Nemours & Co., Inc.
General Dyestuff Corp.
A. Klipstein & Co.
National Oil Products Co., Inc.
Newport Chemical Works.
National Aniline & Chemical Co.
United Chemical Products Co.
Wolf, Jacques & Co.

Dye Works—
Franklin Process Co.

Electric Fans—
Allis-Chalmers Mfg. Co.
General Electric Co.
Westinghouse Electric & Mfg. Co.

Electric Hoits—
Allis-Chalmers Mfg. Co.
Link-Belt Co.

Electric Lighting—
Allis-Chalmers Mfg. Co.
General Electric Co.
Westinghouse Electric & Mfg. Co.

Electric Motors—
Allis-Chalmers Mfg. Co.
Charles Bond Company.
General Electric Co.
Westinghouse Electric & Mfg. Co.

Electric Supplies—
Chicago Fuse Mfg. Co.
Cooper-Hewitt Electric Co.
General Electric Co.
Westinghouse Electric & Mfg. Co.

Elevators—
Link-Belt Co.

Engineers (Mill)—
——See Architects and Mill Engineers

Engineers (Ventilating)—
Bahnson Co.
Carrier Engineering Corp.
Parks-Cramer Co.

Engines(Steam, Oil, Gas, Pumping)—
Allis-Chalmers Mfg. Co.
Sydnor Pump & Well Co.
——See also Ventilating Apparatus.

Expert Textile Mechanic—
J. D. Hollingsworth.

Extractors—
American Laundry Machine Co.
Tolhurst Machine Works.

Fences (Iron and Wire)—
Page Fence and Wire Products Assn.
Wickwire Spencer Steel Co.

Fibre Specialties—
Robers Fibre Co.

Finishing Compounds—
Arnold, Hoffman & Co., Inc.
Borne, Scrymser Co.
Hart Products Corp.
E. F. Houghton & Co.
A. Klipstein & Co.
National Oil Products Co.
Seydel Chemical Company.
Seydel-Woolley Co.
L. Sonneborn Sons Co.

Finishing Machinery—
——See Dyeing, Drying, Bleaching and Finishing.

Flat Wall Paint—
E. I. du Pont de Nemours & Co., Inc.
U. S. Gutta Percha Paint Co.

Flexible Couplings—
Wood's T. B. Sons Co.

Floor Stands—
Wood's T. B. Sons Co.

Fluted Rolls—
Collins Bros. Machine Co.
Fales & Jenks Machine Co.
Woonsocket Machine & Press Co., Inc
Whitin Machine Works.

Flyer Pressers and Overhaulers—
Southern Spindle & Flyer Co.
Whitin Machine Works.
Woonsocket Machine & Press Co., Inc.

Flyers—
Saco-Lowell Shops.
Southern Spindle & Flyer Co.
Whitin Machine Works.

Frames—
Steel Heddle Mfg. Co.

Friction Clutches—
Wood's T. B. Sons Co.
See Clutches.

Fuses—
Chicago Fuse Mfg. Co.

Garnett Roll Grinders—
B. S. Roy & Son Co.

Gearing (Silent Flexible)—
Link-Belt Co.

Gears—
Charles Bond Company
Ferguson Gear Co.

Gears-Silent—
Charles Bond Company
Ferguson Gear Co.

Gear Makers—
Charles Bond Company
Ferguson Gear Co.

Grate Bars—
Thomas Grate Bar Co.

Grab Buckets—
Link-Belt Co.

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N. Y. & N. J. Lubricant Co.
L. Sonneborn Sons, Inc.

Gudgeon Rolls—
Washburn.
Easton & Burnham Machine Co.
Roy, B. S. & Son Co.

Hangers (Ball and Socket)—
Charles Bond Company
William Sellers & Co., Inc.
T. B. Wood's Sons Co.

Hangers (Shaft)—
Charles Bond Company
Hyatt Roller Bearing Co.
William Sellers & Co., Inc
Wood's T. B. & Sons Co.

Hardware Supplies—
Textile Mill Supply Co.

Harness Twine—
Garland Mfg. Co.

Harness and Frames—
——See Heddles and Frames.

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Heddles and Frames—
- Garland Mfg. Co.
- Steel Heddle Mfg. Co.
- L. S. Watson Mfg. Co.

Hopper-Feed Hand Stokers—
- The J. H. Williams Co.

Hosiery Dyeing Machiney—
- Cocker Machinery & Foundry Co.

Humidity and Air Conditioning Aparatus—
- American Moistening Co.
- The Bahnson Co.
- Carrier Engineering Co.
- Parks-Cramer Co.
- R. I. Humidifier & Ventilating Co.

Humidity Controller—
- American Moistening Co.
- The Bahnson Co.
- Carrier Engineering Corp.
- Parks-Cramer Co.
- R. I. Humidifier & Ventilating Co.

Hydro-Extractors—
- Tolhurst Machine Co.

Indigo Dyeing Machinery—
- H. W. Butterworth & Sons Co.
- Cocker Machine & Foundry Co.
- Textile Finishing Machinery Co.

Insurance—
- Liberty Mutual Insurance Co.

Knit Goods Finishing Machines—
- Kaumagraph Co.
- Merrow Machine Co., The

Knotters—
- Barber-Colman Co.
- Merrow Machine Co., The

Knitting Lubricants—
- National Oil Products Co.

Laundry Machinery—
- Tolhurst Machine Works.

Landscape Architect—
- E. S. Draper.

Leather Packings—
- Charles Bond Company.
- Edward R. Ladew Co.
- E. F. Houghton & Co.
- Graton & Knight Mfg. Co.

Leather Loom Pickers—
- Charles Bond Company.
- E. H. Jacobs Mfg. Co.

Leather Strapping—
- Charles Bond Company.
- Edward R. Ladew Co.
- Graton & Knight Mfg. Co.
- E. F. Houghton & Co.

Leather Straps—
- E. H. Jacobs Mfg. Co.

Liquid Chlorine—
- Arnold, Hoffman & Co., Inc.
- Mathieson Alkali Works, Inc.

Looms—
- Crompton & Knowles Loom Works.
- Draper Corporation.
- Hopedale Mfg. Co.
- Stafford Co., The

Loom Beams and Heads—
- Frank Mossberg Corp.
- Mossberg Pressed Steel Corp.

Loom Drop Wires—
- Crompton & Knowles Loom Works.
- Hopedale Mfg. Co.
- Mossberg Pressed Steel Corp.
- Steel Heddle Mfg. Co.
- R. I. Warp Stop Equipment Co.

Loom Harness—
- Atlanta Harness & Reed Mfg. Co.
- Garland Mfg. Co.
- Steel Heddle Mfg. Co.

Loom Pickers—
- Charles Bond Company
- Edward R. Ladew Co.
- E. H. Jacobs Mfg. Co.
- Garland Mfg. Co.
- Graton & Knight Mfg. Co.

Loom Reeds—
- Atlanta Harness & Reed Mfg. Co.
- Greensboro Loom Reed Co.
- Steel Heddle Mfg. Co.

Loom Supplies—
- Chas. Bond Co.
- E. H. Jacobs Mfg. Co.

Lubricants—
- Borne, Scrymser & Co.
- E. F. Houghton & Co.
- N. Y. & N. J. Lubricant Co.
- L. Sonneborn Sons, Inc.

Lubricators—
- Malcolm H. Smith Co., Inc.

Lug Straps—
- Charles Bond Company.
- E. H. Jacobs Mfg. Co.

Machinery Enamel—
- E. I. Du Pont de Nemours & Co., Inc.

Mangles—
- H. W. Butterworth & Sons Co.
- Textile Finishing Machinery Co.

Markers—
- Kaumagraph Co.
- Merrow Machine Co.

Measuring and Folding Machines—
- Curtis & Marble Machine Co.
- Textile Finishing Machinery Co.

Mercerizing Machinery—
- Cocker Machinery & Foundry Co
- H. W. Butterworth & Sons Co.
- Textile Finishing Machinery Co

Metal (Non-Corosive)—
- American Nickel Corporation.

Metal Paint—
- E. I. du Pont de Nemours & Co., Inc.

Meters—
- Allis-Chalmers Mfg. Co.
- General Electric Co.
- Westinghouse Electric & Mfg. Co.

Mill Architects—
- ——See Architects.

Mill Lighting—
- ——See Electric Lighting.

Mill Starches—
- Arnold, Hoffman & Co., Inc.
- Corn Products Refining Co.
- Penick & Ford, Ltd.
- Keever Starch Co.
- Stein, Hall & Co.

Mill Supplies—
- Charles Bond Company.
- Dixon Lubricating Saddle Co.
- E. H. Jacobs Mfg. Co.
- Garland Mfg. Co.
- Textile Mill Supply Co.
- Thomas Grate Bar Co.

Mill White—
- E. I. du Pont de Nemours & Co., Inc.

Monosulphol Oil—
- National Oil Products Co.

Napper Clothing—
- Wickwire Spencer Steel Co.

Napper Roll Grinders—
- Allis-Chalmers Mfg. Co.
- General Electric Co.
- B. S. Roy & Son Co.
- Westinghouse Electric & Mfg. Co.

Oils—
- Arnold, Hoffman & Co., Inc.
- E. F. Houghton & Co.
- A. Klipstein & Co.
- National Oil Products Co.
- N. Y. & N. J. Lubricant Co.
- L. Sonneborn Sons, Inc.
- Wolf, Jacques & Co.

Oil Burners—
- Scott-Newman Oil Burner Co.

Oils (Hyroscopic)—
- National Oil Products Co.

Oils (Rayon)—
- National Oil Products Co.

One-Piece Furnace Linings—
- Carolina Refractories Co.

Cpening Machinery—
- H. & B. American Machine Co.
- Saco-Lowell Shops.
- Whitin Machine Works.

Overhaulers—
- Saco-Lowell Shops.

Overseaming and Overedging Machines—
- Southern Spindle & Flyer Co.

Paints—
- Aluminum Co. of America.
- Tripod Paint Co.
- U. S. Gutta Percha Paint Co.

Patents—
- Paul B. Eaton.
- Siggers & Siggers.

Perforated Machinery Guards—
- Wickwire Spencer Steel Co.

Perforated Metals—
- Wickwire Spencer Steel Co.

Picker Gears—
- Cocker Machinery & Foundry Co.

Pickers (Leather)—
- Charles Bond Company.
- Edward R. Ladew Co.
- E. F. Houghton & Co.
- E. H. Jacobs Mfg. Co.
- Garland Mfg. Co.
- Graton & Knight Mfg. Co.

Picker Sticks—
- Charles Bond Company.
- Garland Mfg. Co.

Piece Dyeing Machinery—
- H. W. Butterworth & Sons Co.
- Cocker Machine & Foundry Co.
- Rodney Hunt Machine Co.
- Textile Finishing Machinery Co.

Pipe and Fittings—
- Parks-Cramer Co.

Portable Elevators—
- Link-Belt Co.

Power Transmission Machinery—
- Allis-Chalmers Mfg. Co.
- Charles Bond Company.
- Hyatt Roller Bearing Co.
- Link-Belt Co.
- Morse Chain Co.
- William Sellers & Co., Inc.
- Wood's, T. B. Sons Co.

Preparatory Machinery (Cotton)—
- H. & B. American Machine Co.
- Saco-Lowell Shops.
- Whitin Machine Works.
- Woonsocket Machine & Press Co., Inc.

Pickers and Lappers—
- Whitin Machine Works.
- Woonsocket Machine & Press Co., Inc.

Pinboards—
- Rodney Hunt Machine Co.
- Washburn.

Porcelain Guides and Parts—
- Rodney Hunt Machine Co.
- Page-Madden Co., Inc.

Presses—
- Economy Baler Co.
- Rex Engineering Co.
- Saco-Lowell Shops.

Pulleys (Cast Iron)—
- Charles Bond Company.
- William Sellers & Co., Inc.
- Wood's, T. B. Sons Co.

Pumps—
- Blackmer Rotary Pump Co.

Pumps (Boiler Feed; also Centrifugal)—
- Allis-Chalmers Mfg. Co.
- Sydnor Pump & Well Co.

Presses—
- Collins Bros. Machine Co.

Quill Boards—
- Washburn.

Quillers—
- Crompton & Knowles Loom Works
- Eastwood, Benj. Co.
- Universal Winding Co.
- Whitin Machine Works.

Quill Cleaners—
- Terrell Machine Co.

Receptacles—
- Economy Baler Co.
- Rogers Fibre Co.

Reels—
- Cocker Machinery & Foundry Co.
- H. W. Butterworth & Sons Co.
- Rodney Hunt Machine Co.
- Frank Mossberg Corp.

Rings—
- Whitinsville Spinning Ring Co.

Ring Spinning Frames—
- Fales & Jenks Machine Co.
- H. & B. American Machine Co.
- Saco-Lowell Shops.
- Textile Finishing Machinery Co.
- Whitin Machine Works.

Ring Travelers—
- Dary Ring Traveler Co.
- National Ring Traveler Co.
- Victor Ring Traveler Co.
- U. S. Ring Traveler Co.

Roller Leather—
- A. C. Lawrence Leather Co.

Rolls—
- American Bobbin Co.
- H. W. Butterworth & Sons Co.
- Collins Bros. Machine Co.
- Fales & Jenks Machine Co.
- Rodney Hunt Machine Co.
- The Whitin Machine Works.
- Woonsocket Machine & Press Co., Inc.
- Saco-Lowell Shops.
- Southern Spindle & Flyer Co.
- Textile Finishing Machinery Co.

Rolls (Metal)—
- Rodney Hunt Machine Co.

Rolls (Rubber)—
- Rodney Hunt Machine Co.

Rolls (Wood)—
- Rodney Hunt Machine Co.
- Washburn.

Roller Bearings—
- Charles Bond Company.
- Hyatt Roller Bearing Co.

Roving Cans and Boxes—
- Denison Mfg. Co.
- Rogers Fibre Co.

Roving Machinery—
- Saco-Lowell Shops.
- Whitin Machine Works.
- Woonsocket Machine & Press Co., Inc.

Saddles—
- Dixon Lubricating Saddle Co.

Sanitary Equipment—
- Vogel, Joseph A. Co.

Sanitary Fountains—
- ——See Drinking Fountains.

Scallop Machines—
- Merrow Machine Co.

Scouring Powders—
- Ford, J. B. Co.
- Bosson & Lane
- National Oil Products Co.

Scrubbing and Cleaning Powders—
- The Denison Mfg. Co.

Sesquicarbonate of Soda—
- Mathieson Alkali Works, Inc.

Section Beam Heads—
- Frank Mossberg Corp.
- Mossberg Pressed Steel Corp.

Selling Agents—
- Woodward, Baldwin & Co.
- Deering, Milliken & Co.
- Reeves Bros.

Selling Agents (Cotton Goods)—
- Amory, Browne & Co.
- Curran & Barry.
- Deering, Milliken & Co.
- Hunter Manufacturing & Commision Co
- W. H. Langley & Co.
- Leslie, Evans & Co.
- Reeves Bros.
- Wellington, Sears & Co.

Sewing Machine—
- Merrow Machine Co.

Sewing Machines and Supplies—
- Curtis & Marble Machine Co.

Shafting, Hangers, Etc.—
- ——See Power Transmission Machinery

Shafting—
- Fafnir Bearing Co.
- William Sellers & Co., Inc.
- Wood's T. B. Sons Co.

Shear Grinders—
- B. S. Roy & Son Co.

Shell Rolls—
- Merrow Machine Co.
- Washburn.

Shell Stitch Machines—
- Merrow Machine Co.

Short Center Drives—
- T. B. Wood's Sons Co.

Shuttles—
- David Brown Co.
- Lowell Shuttle Co.
- Draper Corporation.
- Hopedale Mfg. Co.
- L. S. Watson Mfg. Co.
- The J. H. Williams Co.
- U. S. Bobbin & Shuttle Co.

Silk Yarns (Artificial)—
- American Cellulose & Chemical Mfg. Co
- Duplan Silk Corp.
- Industrial Fibre Co.

Silent Chain Drive—
- Link-Belt Co.
- Morse Chain Co.

Singeing Machinery—
- H. W. Butterworth & Sons Co.
- Textile Finishing Machiney Co.

Sizing Machines—
- Charles B. Johnson.

Sizing Starches, Gums—
- Arnold, Hoffman & Co., Inc.
- Arabol Mfg. Co.
- Hart Products Corp.
- L. Sonneborn Sons, Inc.
- Stein, Hall & Co.

Sizing Compounds—
- Arnold, Hoffman & Co., Inc.
- Bosson & Lane
- Corn Products Refining Co.
- Drake Corp.
- General Dyestuff Corp.
- Hart Products Corp.
- A. Klipstein & Co.
- National Oil Products Co.
- John P. Marston & Co.
- Seydel Chemical Co.
- Sevdel-Woolley Co.
- L. Sonneborn Sons, Inc.
- Wolf, Jacques & Co.

Slashers—
- Charles B. Johnson

Slasher Combs—
- Easton & Burnham Machine Co.
- T. C. Entwistle Co.
- Steel Heddle Mfg. Co.
- Textile Finishing Machinery Co.

Softeners (Cotton)—
- Arabol Mfg. Co.
- Arnold, Hoffman & Co., Inc.
- Bosson & Lane.
- General Dyestuff Corp.
- E. F. Houghton & Co.
- National Oil Products Co., Inc.
- Seydel Chemical Co., Inc.
- L. Sonneborn Sons, Inc.
- U. S. Bobbin & Shuttle Co.
- United Chemical Products Corp.
- Wolf, Jacques & Co.

Softeners—
- Arnold, Hoffman & Co., Inc.
- E. F. Houghton & Co.
- National Oil Products Co., Inc.
- Seydel-Woolley Co.
- L. Sonneborn Sons Co.

Skewers—
- David Brown Co.
- Courtney, Dana S. Co.
- T. C. Entwistle Co.
- Walter L. Parker Co.
- U. S. Bobbin & Shuttle Co.

Slashers and Equipment—
- Saco-Lowell Shops.

Soaps—
- Arabol Mfg. Co.
- Arnold, Hoffman & Co., Inc.
- A. Klipstein & Co.
- National Oil Products Co.
- L. Sonneborn Sons, Ins.
- United Chemical Products Co.

Soda Ash—
- J. B. Ford Co.
- Mathieson Alkali Works, Inc.

Softeners (Oil)—
- Bosson & Lane.
- E. F. Houghton & Co.
- Hart Products Corp.
- National Oil Products Co.
- L. Sonneborn Sons, Inc.
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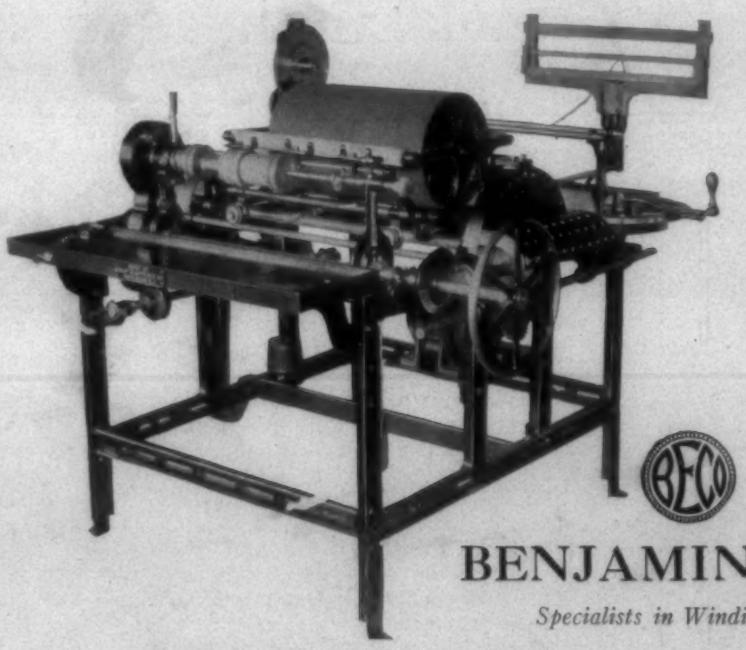

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